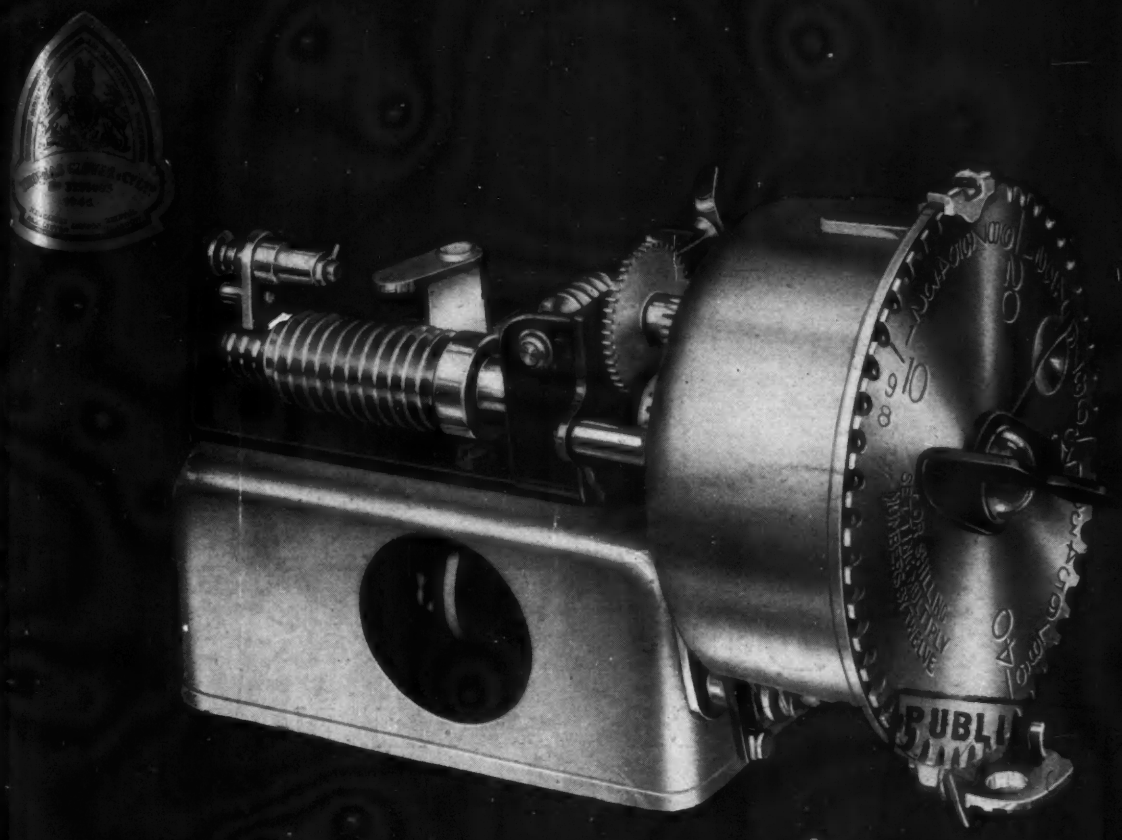
Gas Journal

LIGHT - HEAT - POWER -- BY-PRODUCTS

Vol. 245. 97th Year. LONDON, MAY 30, 1945. Registered as a Newspaper. No. 4280. Price 1/-



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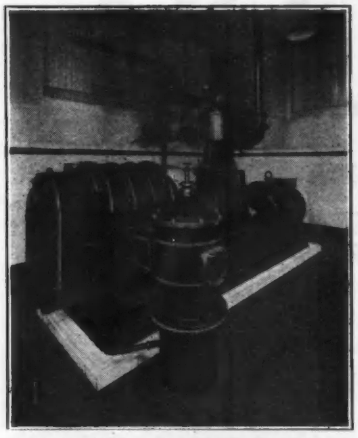

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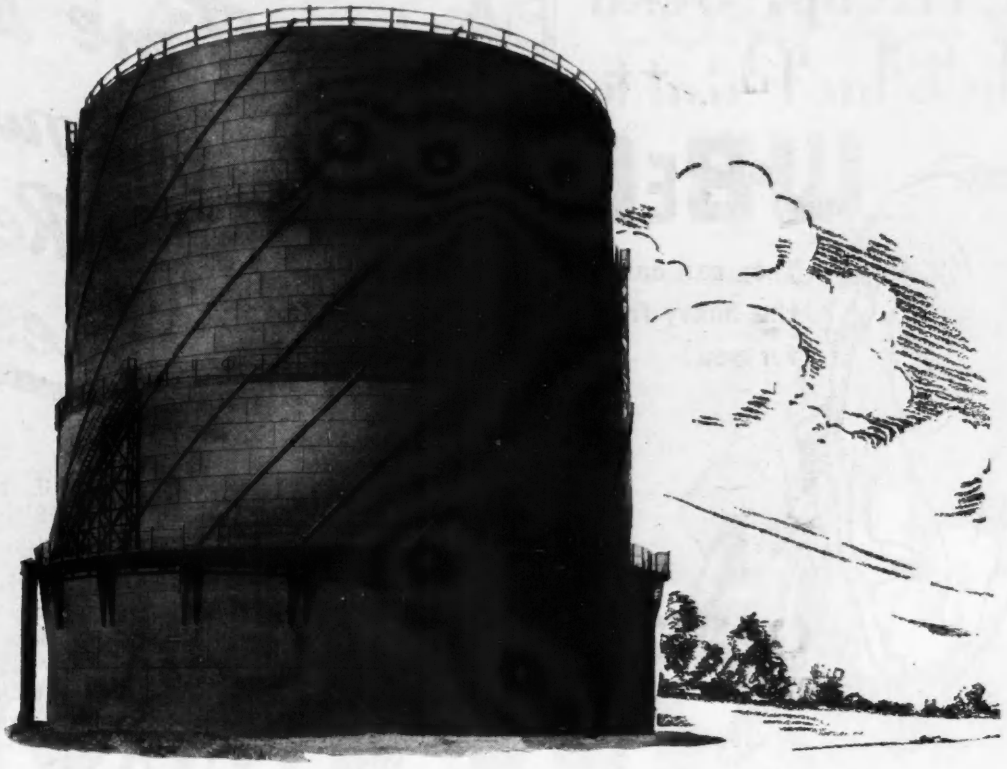

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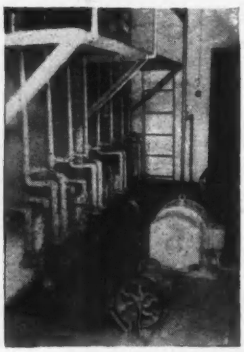

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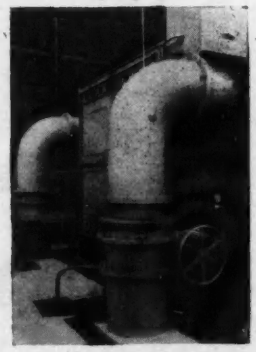

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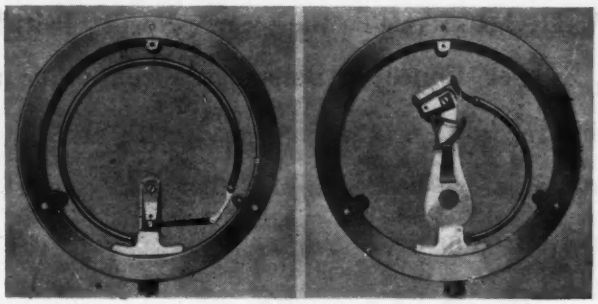
NOTABLE DEVELOPMENTS IN ENGINEERING HISTORY, 4

1850

BOURDON'S PATENT



THE mercurial column was one of the earliest methods adopted for measuring pressures, but with the advent of the locomotive, this arrangement was of necessity replaced by several of the improved pressure-measuring devices that were subsequently developed. These were chiefly dependent upon pressure-responsive elements in the form of diaphragms, flexible bellows and Bourdon tubes. Many of these developments were the subject of patent specifications, one of the outstanding being the patent filed in 1849 by the Frenchman, Eugène Bourdon. The patent was officially described as "Instrument for Measuring, Indicating and Regulating the Pressures and Temperature of Air, Steam and other Fluids, and for obtaining from them Motive Power."

By 1850 John Dewrance senior had promptly obtained for Dewrance & Co. a licence for the sole English rights of Bourdon's patent for the manufacture of Pressure Gauge Tubes.

Bourdon's invention proved a reliable means of controlling steam pressures, the principle of which has remained, and is now almost universally adopted in the construction of pressure, vacuum and hydraulic gauges.

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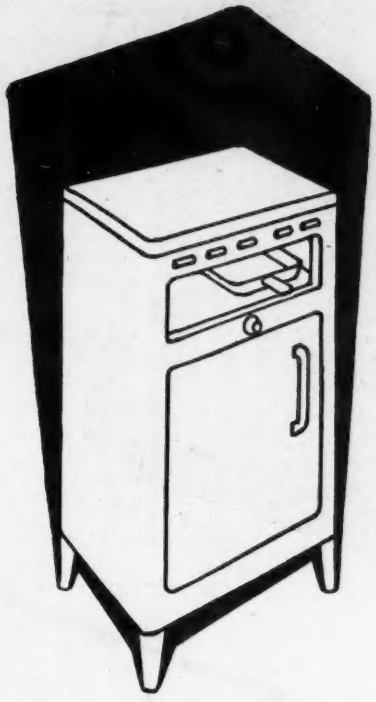

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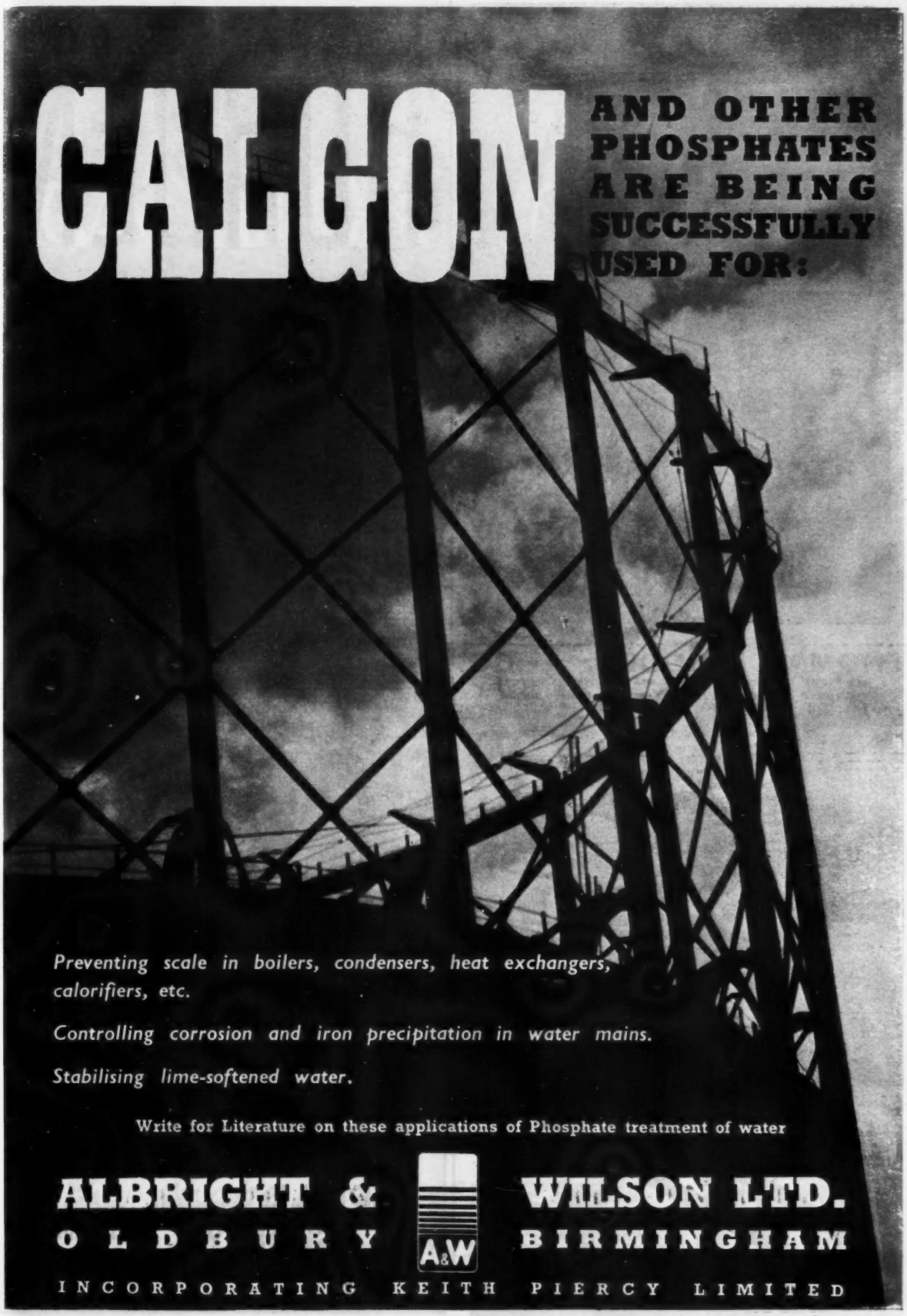

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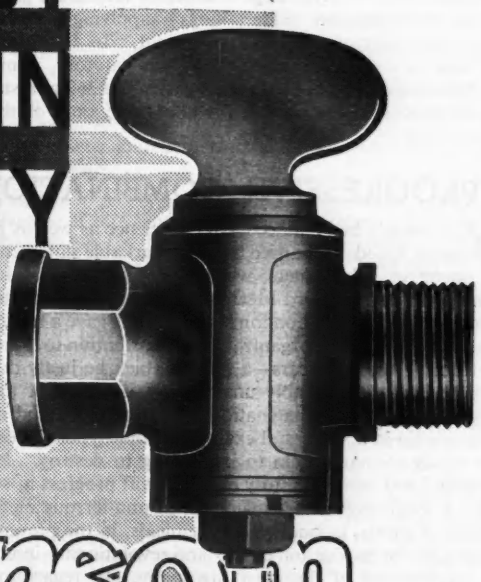

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GAS JOURNAL, MAY 30, 1945

VOL. 245 97th YEAR No. 4280

EDITORIAL NOTES

GAS INDUSTRY AT WAR

JUST published by the Ministry of Fuel and Power is a digest of its wartime activities since it was set up in 1942, which digest includes a section on the Gas Industry giving statistics relating to its progress and development from 1938 onwards to 1944. We give these figures in a series of four tables in our issue to-day, and their interpretation is very interesting. The number of consumers, it will be seen, did not increase. Gas sold, however, rose from 322,000 million cu.ft. to over 380,000 million, with practically the whole of the public lighting load (15,000 million cu.ft. in 1938) in abeyance. Far more coke oven gas was made available to the Industry (49,081 million cu.ft. in 1944, compared with less than 30,000 millions), the coal used for gas-making increased to 21 million tons from 19 million tons, and there was a great increase in water gas production—more than double—with a far greater use of gas oil. This increase in gas output to meet wartime demand was, of course, accompanied by the strongest of exhortations to economize in gas usage to the maximum possible extent, and also by marked attenuation in the staff employed on technical and clerical work, and more especially on distribution. On the distribution side, in four years from 1938 the total employed dropped from 49,000 to 28,000, though female staff showed a rise from 710 to 2,100. These are round figures, giving an idea of the change and of the reduced amount of service which could be rendered generally. Technical and clerical staff showed a drop of 4,000 in total, to 20,300, the while the number of women employed on this work had grown to over 8,000, or to nearly double the pre-war figure. The number employed on the works had grown by 2,300 (to 53,500), entirely accounted for by increased female labour. And we see once again brought into prominent relief the very large number of very small gas undertakings—non-statutory undertakings—supplying such a very small proportion of the total gas output. In 1944 there were 406 statutory gas companies, 367 non-statutory companies, and 274 local authorities supplying gas. The 367 non-statutory undertakings were responsible for about 2% only of the total gas available.

PROGRESSIVE COMBINATION

DULL would he be indeed—in conscience as well as in mind—who failed to be fired by the remarkable statement of co-operative achievement which the Chairman of Imperial Chemical Industries, Lord McGowan, made at the general meeting of the Company in London last week. He gave a most inspiring account of this vast organization's contribution to the national effort during the war years—a record which he justly described as unexcelled and probably unequalled, the result of the combination of scientific imagination, technical skill, and efficient workmanship in a successful example of that type of free enterprise which so many seem to be seeking to destroy. It was a fascinating and romantic story of such swift progress in so many fields—in explosives and armaments, in non-ferrous metals and plastics, in paints, lacquers, and chemicals, in the prevention of disease and the production of new and revolutionary insecticides. The implications of the story are many. In regard to petrol production, for example, the knowledge and experience gained in the operation during four years of the hydrogenation plant at Billingham proved the foundations on which was built a successful home production of the highest grade aviation spirit in Britain. A large new refinery built in Lancashire, together with the Billingham plant, produced hundreds of thousands of tons a year of high grade aviation fuel—a special fuel developed gave the engines of fighter planes up to 25% more power than any previous aviation fuel. The stimulus of war intensified teamwork, the co-operation of scientists and technicians and of both with workpeople, and it reduced the time-lag which so often separates a scientific design from its practical employment.

The war in Europe over, we turn to the transition stage, from war production to peace production. We are told that we must export more and more if we are to import the necessities of everyday life, let alone meet the increased bill for social services. How, asked Lord McGowan, can this be done in a volume and at prices which other countries will pay if we are uncertain first of our supplies of coal, and secondly of the price at which we can buy them? The coal bill to-day of Imperial Chemical Industries is £4,000,000 a year higher than it was in 1939; even at the increased price the organization is disturbed at the prospects of being unable to obtain adequate supplies. The tasks ahead are formidable enough, and they can be met and overcome only by the display of the same resolution as has characterized the facing of wartime tasks. This at a time when in certain quarters there is a disposition to consider that free enterprise has had its day and should be superseded by State control. Lord McGowan asked, with commendable logic, that the administration of business should be left to those who, by long experience, are most competent to handle it, and should not be placed under the bureaucratic control which must inevitably result from national ownership or from State control. "The worst feature of the present cry for nationalization," he said, "is the uncertainty as to what the word means. Hardly a week-end passes without some politician declaring his desire to nationalize this industry or that. I have nowhere seen anything approaching an exact definition of what is meant by it and what is to be substituted for free enterprise. One also hears much loose talk regarding combines and cartels, which is almost invariably based upon ill-formed generalizations on the part which they play in the industrial life of the country. Personally, I have not the slightest objection to an impartial investigation into the whole matter. It may not be inappropriate for me to suggest that similar steps should be taken in connexion with Trade Unions, with a view to determining the effect on industry resulting from any alleged restrictive practices in the use of labour."

Britain's Oil and Natural Gas

In a communication published in a recent issue of *Nature* Dr. G. M. Lees, of the Anglo-Iranian Oil Company, explained that during the past 10 years intensive geological and geographical work and the drilling of 52 deep and 43 shallow exploration borings by the D'Arcy Exploration Company (subsidiary of the Anglo-Iranian) have yielded an immense amount of new information. They have proved five oilfields and two areas of natural gas, and these fields are now producing from 243 wells. The total production up to the end of 1944 was 337,000 tons. The crude oil is of good quality, with good light and lubricating oil fractions. The specific gravity ranges from 0·83 to 0·89. The oilfields are situated about eight miles north-west of Newark, at Eakring, Duke's Wood, Caunton, and Kelham Hills, and there is one isolated small field at Formby, between Liverpool and Southport. The Nottinghamshire oilfields produce from depths of 1,900—2,500 ft. The gas fields are at Aislaby in Eskdale, North Yorkshire, and at Cousland near Dalkeith, Scotland. Short tests have indicated that the gas may be present in sufficient quantity to justify commercial exploitation.

Greetings from the Channel Islands

The following cheerful telegrams were received by the Secretary of The Institution of Gas Engineers from members of the Institution in the Channel Islands immediately after their recent liberation. Mr. R. G. Luxon, of Guernsey, wired: "Take earliest opportunity greet you after liberation from Nazi rule. Had shut down gas-making December, 1944; expect restart early June." A telegram from

S. P. Pepin, of Jersey, read: "Fully conscious and deeply appreciative of the Industry's share towards our liberation. We send you all kindly greetings and best wishes." Which good wishes we cordially reciprocate.

Personal

Mr. C. F. BROADHEAD, the present Managing Director, has been appointed Chairman of the Colonial Gas Association in the place of the late Sir Arthur Robinson.

* * * *

Mr. J. P. KEOGH, of Ipswich, has been appointed Engineer and Manager of the Heckington (Lincs) Gas Company in succession to Mr. G. E. SHEARMAN, who is leaving shortly for Southwell, Notts, after 7½ years at Heckington.

Obituary

The death has occurred of Sir ARTHUR ROBINSON, K.C.M.G., Chairman of the Colonial Gas Association and a member of the Board since 1925. He was appointed Chairman on the death of the late Mr. P. C. Holmes Hunt in 1941. Sir Arthur, who for some time was Solicitor-General under the Victorian Government, rendered valued service to the Association.

Letters to the Editor

The Channel Islands

DEAR SIR,—I very much appreciate your having sent me the three latest issues of the "GAS JOURNAL," and I can assure you that after years of Nazi domination, during which time we were not permitted to see a single paper or periodical of any description other than German propaganda material, it came as a great pleasure and relief to be able to put my nose into the "JOURNAL" again. I was so snowed under with correspondence from all over England that up to now I have had no opportunity to reply to you, but I can assure you I cordially appreciate your kindly thought in sending me the "JOURNALS" so soon.

You can imagine we have had a very trying time here, but at the same time I do not think we lived under such terror conditions as you may have experienced in the London area, and I rejoice to think that we are again free. The atmosphere of this Island has altered considerably, and the reaction of the people likewise since the arrival of the British troops.

I shall be glad if you will continue to send on the "GAS JOURNAL," because I fear we have got somewhat behind the times in regard to many matters that have come up for review on the mainland, and this particularly applies to coal. You may be interested to know that despite all the difficulties of securing supplies of coal from France during the occupation period, we managed to keep up a gas supply without intermission until Dec. 21, 1944. From that date it was not possible to get supplies of coal, but as we knew that the logical inference from this was that the Allies were pushing through France, we took it as a good omen and were quite prepared to face the inevitability of closing down. However, we have now got our furnace fires well alight, and I am hoping to resume a supply of gas early next month. I can only say that the general reaction of actually being without gas has been to give us a tremendous boost with our consumers, who have now realized what a boon gas was to them, and perhaps they would never have realized it to quite the same extent had they not been absolutely without for five months.

With cordial good wishes,

Guernsey Gas Light Company, Ltd. Yours faithfully,
May 26, 1945. R. G. LUXON,
Engineer and Manager.

Difficulties Surmounted

DEAR SIR,—The day so long and eagerly awaited has dawned and passed, and without doubt we all felt an exhilaration, mitigated, however, with sympathy and regret for those unable to share our joyful celebrations.

It would also seem to be the appropriate moment for an expression of thanks to the Gas Industry and to the Trade Press for their co-operation, tolerance, and forbearance with manufacturers, who in many cases have carried on under difficulties which could not be divulged and were, therefore, not understood. In our own case we see an admirable example from a town in which, due to the exigencies of the situation, every man and woman was compelled to transfer to urgent war work.

In October, 1940, we received two severe blows; the first obliterated our tools store at a time when tools were almost unprocurable, causing disorganization which was as great as would have been the case had there been more structural damage. The second attack in October completely burned out one of our departments. In November of the same year we received most extensive damage throughout the whole of the factory, and in consequence facilities were reduced and a number of employees had unfortunately to be released. Again, in April, 1941, a high explosive bomb fell in the middle of the factory and two unexploded bombs lay in another corner.

From October, 1940, until February, 1942, it will be realized that rehabilitation and rebuilding was taking place, and it is perhaps interesting to note that 136 incendiary bombs were collected from inside the factory. In addition to the above we sustained two serious fires, one in Coventry and the second in London. The London works were, of course, also subject to damage from enemy action.

We know that there were many rumours regarding our position, and obviously we could not give any explanations for any disappointments, of which we were the inadvertent cause. At the same time we rejoice to think that those days are now past, and while the future will bring with it many difficulties which must be surmounted, we are supremely confident that we, in common with other manufacturers, will play our part to reinstate this England in a pre-eminent position in the world of the future.

George Wilson Gas Meters, Ltd., Yours faithfully,
Coventry. J. H. WILSON,
May 16, 1945. Chairman and Managing Director.

Gas Industry Terms

DEAR SIR,—Surely, on his own showing, "Carboniser" should have spelt his name "Carbonisor"?

Yours faithfully,
May 25, 1945. "STICKLOR."

Reprints are now ready of the Address given by Mr. A. E. Sylvester, F.C.A., to the Southern Association of Gas Engineers and Managers on May 3, in which he discussed the important subject of the relationship of gas price to cost. Price 6d. each plus postage, from the "GAS JOURNAL" Offices.

Diary

June 2.—Manchester and District Junior Gas Association: Visit to Partington Gas-Works, Manchester. Paper by T. B. Smith.
June 5.—B.G.C.: Domestic Development Committee: Gas Industry House, 2.30 p.m.
June 6.—London and Counties Coke Association: Technical Committee, Gas Industry House, 11 a.m.
June 6.—Women's Gas Council Headquarters Members' Meeting: Gas Industry House, 3 p.m. Talk by Miss K. M. Halpin, O.B.E., on U.N.R.R.A.
June 11.—National Federation of Gas Coke Associations: National Technical Committee, Gas Industry House, 2.30 p.m.
June 12–13.—Institution of Gas Engineers: Annual Meeting, London.
June 14.—N.G.C.: Annual Meeting, Gas Industry House, S.W. 1, 10.30 a.m.
June 14.—Federation of Gas Employers: Annual Meeting, Gas Industry House, S.W. 1, 2.30 p.m.
June 14.—B.C.G.A.: Annual Meeting, Gas Industry House, S.W. 1, 11.45 a.m.
June 21.—Industrial Gas Centres Committee: Gas Industry House, 10 a.m.
June 23.—Western Junior Gas Association: Meeting at Minehead.
June 25.—Women's Gas Council: Annual General Meeting, Gas Industry House, 3 p.m.
July 6.—Manchester District Association of Gas Engineers: Visit to Rochdale.

South-Eastern Gas Corporation, Ltd., announce the payment of a final dividend of 2½% actual, less tax, on the Ordinary Stock, making 4% actual, less tax, for the year ended March 31 (same). They also announce that the net profit for the year was £99,396 (last year £98,852). The general meeting will be held on June 14.

The Regional Planning Committee has put a suggestion to local authorities in the Clyde Valley Area that the policy of combining gas undertakings to form a grid system should be examined. A conference is to be held by the Regional Committee in Glasgow on June 1, for the purpose of discussing the desirability of engaging an eminent engineer to report on the feasibility of combining the gas undertakings within the region. A circular letter has been sent to various local authorities and gas undertakings inviting them to appoint representatives to the conference, which will be held in the Glasgow City Chambers.

The British Standards Institution has recently issued a revised edition of B.S. 341, "Valve Fittings for Compressed Gas Cylinders." In the present revision no changes have been made in the basic dimensions of the outlet threads standardized in the 1931 edition, and interchangeability of connexions with valves made to the 1931 edition or to the present standard remains. The Appendix on gauges has, however, been revised, and certain modifications have been adopted on the recommendations of the National Physical Laboratory. The scope of the Standard has been extended by the inclusion of the dimensions and gauges for valves of 1.25 in. nominal size. The former edition of the standard was limited to the dimensional features of the valves. In the present edition, schedules giving the essential properties of the steel and bronze or brass are included. The present standard also gives the dimensions for valving capsules. Copies of this British Standard, No. 341 : 1945, may be obtained from Publications Department, British Standards Institution, 28, Victoria Street, London, S.W. 1. Price 2s. post free.

The Gas Industry in the War Years

The following tables, published in a Digest of the work of the Ministry of Fuel and Power and presented as a White Paper, give a picture of the expansion of the Gas Industry from 1938 to 1944.

TABLE A.—NUMBER OF UNDERTAKINGS, MATERIALS USED, GAS MADE, AND TOTAL GAS AVAILABLE FROM 1938.

	1938.	1939.	1940.	1941.	1942.	1943.	1944. (provisional)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Number of undertakings—							
Statutory: Local authorities*	298	293	284	79	275	274	274
Companies	405	411	409	406	406	406	406
Other: Companies	402	382	380	374	371	369	367†
Total	1,105	1,066	1,073	1,055	1,052	1,049‡	1,047
Materials used for making gas—							
Coal (thousand tons)	19,128	19,302	17,983	19,319	20,634	20,740	20,777
Gas oil (thousand gallons)	32,707	34,033	40,180	46,937	52,858	50,390	96,116
Gas made (mill. cu.ft.)							
Coal gas: Statutory	276,483	276,130	260,368	277,926	285,678	289,866	...
Other	8,520	7,960	7,996	9,169	9,742	8,644	...
Total	285,003	284,090	268,364	287,095	295,420	298,510	296,103
Water gas: Statutory	27,253	27,110	25,774	32,963	37,571	40,232	...
Other	383	379	418	462	526	581	...
Total	27,636	27,489	30,192	33,425	38,097	40,813	60,125
Other gas: Statutory	6,519	7,060	7,548	8,474	9,006	8,236	...
Other	391	423	453	482	540	545	...
Total	6,910	7,483	8,001	8,956	9,546	8,781	7,661
Total Gas Made—							
Statutory: Local authorities	112,550	112,280	110,827	120,387	127,719	131,393	...
Companies	197,705	198,020	186,863	198,976	204,536	206,941	...
Other: Companies	9,294	8,762	8,867	10,113	10,808	9,770	...
Total	319,549	319,062	306,557	329,476	343,063	348,104	363,889
Gas bought from coke ovens	29,621	33,109	36,765	41,582	46,880	46,907	49,081
Total gas available—							
(Million cu.ft.)	349,170	352,171	343,322	371,058	389,943	395,011	412,970
(Million therms)	1,659	1,655	1,579	1,725	1,813	1,841	1,924

* Includes 5 Joint Boards

† Excludes 18 companies making gas as a subsidiary undertaking; the small quantity of gas made has, however, been included in the relevant portion of the above table.

‡ The number of works in which gas was made (including works with standby plant) at the end of 1943 was as follows:—Statutory: Local authorities, 285. Companies, 447. Non-statutory: Companies, 361.

TABLE B.—SIZE DISTRIBUTION OF UNDERTAKINGS ACCORDING TO SALES IN GAS IN 1943.

Group (1)	Number of Undertakings (2)	Sales of group (thousand therms) (3)
Up to 25,000 therms	83	1,028
25,001 to 50,000 „	104	3,035
50,001 „ 100,000 „	141	8,654
100,001 „ 250,000 „	246	32,224
250,001 „ 500,000 „	130	46,870
500,001 „ 1,000,000 „	123	86,350
1,000,001 „ 2,500,000 „	99	149,907
2,500,001 „ 5,000,000 „	62	215,637
5,000,001 „ 10,000,000 „	34	240,706
10,000,001 „ 25,000,000 „	17	259,306
Over 25,000,000 „	10	640,195
Total	1,049	1,683,912

TABLE C.—EMPLOYMENT, AND CAPACITY OF GAS-MAKING PLANT.

Group (1)	July, 1939. (2)	December, 1943. (3)
Employment—		
At Works: Males	50,875	50,736
Females	324	2,772
Total	51,199	53,508
On distribution: Males	48,439	26,109
Females	714	2,140
Total	49,153	28,249
Administrative, technical, clerical, &c.: Males	19,902	12,274
Females	4,435	8,029
Total	24,337	20,303
Total employment Males	119,216	89,119
Females	5,473	12,941
Total	124,689	102,060

	Winter 1944-1945. (Thousand cu.ft.)
Capacity of gas-making plant installed at gas-works—	
Maximum capacity per week—	
Coal gas	9,221,359
Water gas	3,262,791
Other gas	412,902
Maximum make in any week—	
Coal gas	7,180,085
Water gas	2,008,398
Other gas	164,021

TABLE D.—NUMBER OF CONSUMERS, GAS SOLD, AND TOTAL REVENUE FROM 1938.

(1)	1938. (2)	1939. (3)	1940. (4)	1941. (5)	1942. (6)	1943. (7)	1944. (8)
Number of consumers—							
Mainly domestic:							
Prepayment						7,575,000	
Credit						3,052,000	
Industrial	11,215,000	11,348,000	11,231,000	10,992,000	10,972,000	98,000	Not yet available
Government and Services						38,000	
Local authorities						50,500	
Others						385,500	
Total...						11,199,000	
Gas sold (mill. cu.ft.)—							
Public lighting	15,052	9,804	1,055	1,521	1,669	1,265	
Mainly domestic:							
Prepayment*						138,470	
Credit*						69,806	Not yet available
Industrial	307,034	311,544	311,512	327,237	356,750	103,160	
Government Departments and Services ...						6,824	
Local authorities						6,999	
Other premises						36,104	
Total (million cu.ft.)	322,086	321,348	312,567	328,758	358,419	362,628	379,106†
Million therms	1,530	1,510	1,438	1,529	1,667	1,690	1,767†
Total revenue‡ (Authorized Undertakings)—							
Local authorities (£'000)	23,530	23,384	26,044	30,179	32,116		
Companies	45,772	50,002	53,395	58,107	65,720		
Total	69,302	73,386	79,439	88,286	97,836	Not yet available	

* Estimated to have been 194,737 million cu.ft. in 1938. The corresponding provisional figure for 1944 is 223,391 million cu.ft.
† Provisional.
‡ Includes revenue from sale of all products, rentals and other receipts.

Manchester District Association

The 75th Annual Meeting of the Manchester District Association of Gas Engineers was held in the Engineers' Club, Manchester, on April 27, the President, Mr. NORMAN HUDSON (Mirfield), in the Chair. The President extended a welcome to Councillor Walter Rhodes, Chairman of the Rochdale Corporation Gas Committee, who had come to support Mr. C. H. Bamber, Engineer and Manager of the Rochdale Corporation Gas Undertaking, and Mr. W. Barclay, Regional Gas Officer of the Ministry of Fuel and Power for the N.W. Division.

The PRESIDENT said that since the last business meeting they had lost an old member in Mr. John H. Brearley, of Harrogate, who had been a member of the Association since 1897 and was its President in 1906.

Mr. Wilfred Murray Gabbutt, Gas Engineer, Barrow-in-Furness, was formally inducted as a member of the Association.

Mr. R. L. GREAVES (St. Helens), in the absence of Mr. T. Reynolds (Stockport), presented the report of the Lancashire Commercial Section for the year ended Dec. 31, 1944. It stated that all the meetings of the Section had been well attended, and its activities had proved to be most popular in the Lancashire area.

Mr. J. D. ASHWORTH (Blackburn) seconded the adoption of the report, which was unanimously approved.

Mr. G. E. CURRIER (Bradford) proposed the adoption of the report of the Yorkshire Commercial Section, and Mr. T. E. L. COOPER (Yeadon) seconded.

The following recommendations of the Committee were unanimously approved and adopted:

That a donation of 35 guineas be granted to the Benevolent Fund of the Institution of Gas Engineers.

That Mr. Cecil H. Bamber, B.Sc., (Rochdale) be appointed the Association's District Member of the Council of The Institution of Gas Engineers for the year 1945–6.

That Messrs. R. Walker (Manchester) and N. Hudson (Mirfield) be appointed representatives of the Association on the Councils of the Manchester and District and Yorkshire Junior Gas Associations respectively.

That Messrs. C. H. Bamber, A. K. Collinge, F. G. Shaw, R. Walker, and R. L. Greaves be appointed representatives of the Association on the Lancashire District Gas Education Committee.

That Messrs. G. E. Currier, W. B. Harrison, J. M. McLusky, and D. T. Livesey be appointed representatives of the Association on the Yorkshire District Gas Education Committee.

That Messrs. L. W. Harrison and R. N. Webb be appointed representatives of the Association on the Barnsley Advisory Committee of Coke Oven and Chemical Works.

The PRESIDENT stated that the Council recommended members to agree that the Association should join the Institute of Fuel as collective members, and, if this was confirmed by the meeting, the cost to the Association would be 10 guineas per annum. It was suggested that the representatives appointed should be the President and Senior Vice-President of the Association for the time being.

On the motion of Mr. C. S. SHAPLEY (Leeds), seconded by Mr. D. T. LIVESEY (Doncaster), it was unanimously resolved that the Association make application for collective membership with the Institute of Fuel.

The PRESIDENT, in inducting Mr. Cecil H. Bamber, the President-elect, into the Presidential Chair, said it would have been difficult to have chosen a member of the Association more fitting to fill the position at the present juncture in the history of the Gas Industry. More and more had it become apparent in recent years that the chemical engineer with a commercial training was the man on whom the Gas Industry would have to depend to a large extent in order to progress and develop. In Mr. Bamber they had a man who, although pre-eminently a chemist, was at the same time a very knowledgeable engineer, and a man who had received his training in the practical and commercial side of gas manufacture and distribution.

He had great pleasure in investing Mr. Bamber with the President's Badge of the Manchester District Association of Gas Engineers.

Mr. Bamber then took the Presidential Chair.

The PRESIDENT (Mr. Bamber) said his first duty was the pleasing one of expressing the thanks of the members and of himself to Mr. Norman Hudson for his services as President during the past year. Mr. Hudson had been very active in looking after Association interests generally, and the reports he presented had been very clearly expressed, and were an indication of the complete grasp of the implications of the subjects with which he was dealing.

Mr. J. E. LISTER COOPER (Yeadon) seconded the vote. He had known Mr. Hudson ever since he entered the Industry, and he had always been a man with original ideas the worth of which he had been able to demonstrate and carry out into practice.

The PRESIDENT said that before putting the vote to the meeting he had one other duty to fulfil, which was to present the Past-President with a Badge commemorating his year of office. It was not possible nowadays to provide the customary Badge, but, as in the previous year, he believed, a Past-President's Badge had become available through the kindly offices of another member. In this case it was the Badge of Mr. Hudson's father, Mr. E. H. Hudson, of Normanton, who was President of the Association in 1920. Mr. Beaumont Hudson, of Pontefract, the brother of the Past-President, had offered his father's Badge to the Association for presentation and to take the place of a new one which they were unable to obtain.

Councillor WALTER RHODES (Chairman of the Rochdale Corporation Gas Committee) expressed the pleasure his Committee and himself felt upon learning of Mr. Bamber's election to the Presidential Chair. It was customary for the members of the Association to visit the undertaking of which their President was in control, and the Rochdale Corporation Gas Committee would look forward to such an occasion and extended a welcome to all who could attend.

Mr. Bamber then gave his Presidential Address (see "JOURNAL" of May 2, p. 561).

Mr. G. E. CURRIER (Bradford) proposed a vote of thanks to the President for his Address. The President had quoted the following statement of the Minister of Fuel and Power in September, 1943: "The time has gone when we can afford merely to burn coal and allow its vast potentialities to go to waste." The Gas Industry had been preaching this gospel for many years and at long last it seemed to be permeating into Government Departments. It was to be hoped that the various Ministries dealing with post-war housing would bear the statement of the Minister in mind when formulating their fuel policy for the millions of new houses which were needed. The establishment

of a smokeless zone in the centre of each town of, say, 100,000 and over inhabitants should be one of the first reforms of the new Parliament after the cessation of hostilities in Europe. Reference had also been made in the Address to the changes in gas-works technique which had taken place; and the need for technicians, such as chemists, physicists, and chemical engineers could not be overstressed. Unfortunately the salaries offered by the majority of municipal undertakings for these technicians were not such as would attract the best type of men, and the undertakings would inevitably suffer in consequence. He, the speaker, was in entire agreement that only fully qualified men should be appointed to the higher positions, but this could only be done if the salary was commensurate with the responsibilities of and the qualifications necessary for the office.

Mr. T. R. COOK (Blackpool) seconded the vote.

Mr. A. K. COLLINGE (Preston) proposed a vote of thanks to the retiring officers of the Association and the members of the Committee for their services during the past year, and Mr. J. M. MCLUSKY (Calverley and Horsforth) seconded.

The PRESIDENT announced that the provisional date fixed for the visit to Rochdale was Friday, July 6.

Wales and Monmouthshire Association

The 40th Annual Meeting of the Wales and Monmouthshire Association of Gas Engineers and Managers was held at Pontypool on May 17 under the Presidency of Mr. W. T. KENSHOLE, Merthyr Tydfil. The attendance was a large one, and the arrangements made by the Social Secretary, Mr. J. Sadler, were much appreciated.

The morning session was held at the Town Hall, where a civic welcome was extended to the members by Councillor LEWIS LEWIS, Chairman of the Pontypool District Council. He said he was one of those who felt there were great possibilities for the Gas Industry. They could look back with pride on the way they had maintained their essential service during the war, and he hoped that in their deliberations they would find ways and means of giving the consumer those improvements which had been denied to him during the past five and a half years.

The PRESIDENT extended a warm welcome to Major E. Ivor David, Regional Gas Officer, Ministry of Fuel and Power.

Sympathetic reference was made to the death of Sir Reginald Clarry, M.P., an Honorary Member of the Association, and Mr. K. G. Brown, Llanelly, who was killed in action in February.

Three new Associates were elected, as follows: Messrs. H. W. Castleton (Lydney), J. Lloyd (Dolgelly), and D. S. Davies (Porthcawl).

Mr. E. M. EDWARDS, Hon. Secretary, in presenting the annual report, stated that the total membership of 171 showed an increase of six on the year. Attention had been given to the suggested formation of a Joint Council of senior district associations to consider the salaries of gas engineers and technical staff. The work of the Gas Engineering Advisory Board had been continued through the medium of the district groups, and in view of the serious fuel position members were urged to co-operate with the Board in taking every possible step to effect economy in the use of fuel and in the prevention of avoidable losses. The Council had agreed with suggestions put forward by the South Wales Section of the Institute of Fuel that would lead to greater co-operation between kindred societies in the area. Removal of the restrictions on the presentation of results had revealed very large increases in gas output by almost all gas undertakings in the region. In the case of some undertakings the demand for gas had become more than three times that of 1939, and it stood to the credit of the Industry that the demands made upon it had been fulfilled.

Mr. EDWARDS also reported on the Octavius Thomas Memorial Fund, stating that now that the war in Europe was over the Council would give consideration to the utilization of the fund for the encouragement of students, as originally intended.

Mr. D. W. REES, Assistant Secretary, reported on the H. D. Madden Memorial Fund, remarking that the position was similar.

The PRESIDENT proposed the election of Mr. O. P. Cronshaw (Rhyl) as President for the ensuing year. It was only recently that the Northern area had become united with the Southern area, and the Council was confident that in Mr. Cronshaw the Association would have a President who would strengthen the ties and bring about that measure of unity which they so earnestly desired.

Mr. W. CLARK JACKSON (Neath), in seconding, said he had long felt that Wales had not had its correct position in the Industry on account of the fact that it was divided into two sections. The war very perfunctorily brought about a change inasmuch as Wales was scheduled as No. 8 region, and a single organization had to be set up for dealing with Wales as a whole. The co-operation brought about by both North and South Wales in the new set-up was such as to confirm his opinion that Wales ought to stand united, and he was confident that the election of Mr. Cronshaw would bringa bout greater help and co-operation. Those of them who were on the British Gas Council had many other ideas with regard to the Gas Industry in Wales as a whole, and those ideas would come before them at an early date at a special meeting convened for that purpose. In the meantime he felt they would have in their new President a gentleman widely experienced in the Gas Industry, holding a high reputation in the Industry, and held in high regard by his colleagues in the North and by all who had had dealings with him in past years.

Mr. CRONSHAW briefly returned thanks for his election, which he regarded as an honour for North Wales rather than a personal tribute. There were many problems to face in the next year or two, and it was all to the good that they should face them unitedly.

Other officers were elected as follows: *Senior Vice-President*, E. M. Edwards; *Junior Vice-President*, B. J. Bell; *Members of Council*, W. F. Edwards and W. R. Branson; *Treasurer*, J. H. Canning; *Secretary*, E. M. Edwards; *Secretary, North Wales Section*, W. J. Mulley; *Assistant Secretary*, D. W. Rees; *Auditors*, Mr. J. Powdrill and Mr. A. Pickard.

On the proposition of Mr. J. F. RUST, seconded by Mr. D. W. REES, the meeting voted a grant of £15 15s. to the Benevolent Fund of The Institution of Gas Engineers. Mr. Rust pleaded for increased individual support for the Fund, pointing out that 44% of the members of the Institution were still not subscribing.

Mr. KENSHOLE then delivered his Presidential Address, which will be dealt with in a later issue of the "JOURNAL."

Mr. CRONSHAW proposed a vote of thanks to the President for his Address, and especially welcomed his reference to the technical troubles of the smaller works. If something was not done for them they were going to find it difficult to carry on. Technical control was very necessary in these days, not only in regard to gas but also in the proper grading and utilization of coke. He was glad to know that South Wales was a development area, but he would have been better pleased if all Wales had been included. There was going to be trouble in North Wales unless they had some industrial development, especially on Dee-side, and around Wrexham many factories were closing down.

Mr. D. MUIR (Pontypridd) seconded and the vote of thanks was carried with acclamation.

The PRESIDENT, in reply, said it would have been easy to include lots of figures and tables showing what had been done during the war years, but while they would have been very illuminating they would not, in his opinion, have been of much real value owing to the period of transition through which the Industry was passing.

Congratulations were offered to Mr. W. R. Branson on the award to him of the Silver Medal of the Society of British Gas Industries for his Paper to the Junior Association on "Post-War Domestic Fuel Policy with Particular Reference to South Wales." The Paper, said Mr. Kenshole, was of outstanding importance, and the award was a credit both to Mr. Branson and the Company he served.

The members then adjourned to the Clarence Hotel for luncheon, and at the afternoon session Mr. J. H. CHAPMAN (Swansea) read a Paper on "More Thoughts on Post-War Planning." The Paper and discussion will be dealt with subsequently in the "JOURNAL."

Proposing the tost of "The Town and Prosperity of Pontypool" at the luncheon, Mr. R. J. AUCKLAND announced that the Kitchen Planning Exhibition which attracted over 100,000 people to Dorland Hall, London, and had since been shown at Kingston, was to be shown in June at Howell's Stores, Cardiff, and it was hoped that at least an equal number of the people of South Wales would see the exhibition there. Councillor LEWIS LEWIS responded to the toast.

The toast of the Association was proposed by Major E. IVOR DAVID, who mentioned that among those present was the son of Mr. D. Muir, who was just back home after being a prisoner of war for some years. The PRESIDENT, in responding, said they were all indebted to Major David for the help and guidance he had so freely given in the course of his contact with the Industry.

In celebration of victory in Europe, the President invited the members to contribute to a retiring collection on behalf of the Benevolent Fund, and at the afternoon session he announced that over £17 had been collected.

1945 Melchett Medallist

The Council of the Institute of Fuel have decided, by unaminous vote, to award the Melchett Medal for 1945 to Professor C. H. Lander, C.B.E.

The work Professor Lander has done in connexion with fuel during the past 30 years is well known to all interested in the subject. He has also during the war turned his efforts, in collaboration with others, to many further developments, some of which he may be permitted to speak about when giving his Melchett Lecture to the Institute in October next. There are still, however, additional directions in which his work has been unique and of great national service during the war which cannot at present be revealed.

The Duke of Argyll has handed over to the control of the Caledonian Gas Corporation, Ltd., the Inverary Gas-Works on a 25 years' lease.

The Malta and Mediterranean Gas Company, Ltd., have declared a dividend (payable July 16) of 7% on the 1st Preference Stock and 7½% on the 2nd Preference Stock. It is expected that the accounts for the year ended March 31 will not be available to the stockholders for some months. To avoid further delay the Directors have declared the dividend above stated as an interim dividend but, in so doing, they will not be able to recommend, later in the year, the payment of a dividend on the Ordinary Stock.

Midland Association

Over 120 members of the Midland Association of Gas Engineers and Managers accepted the invitation of the Hinckley Urban District Council to visit the home town and works of their President, Mr. A. B. Britton, on the occasion of the Spring Meeting on May 24. Although according to some geographical experts Hinckley is the very centre of England it was the first visit many of the members had paid to the town, and they were impressed by its modernized gas-works, its staple industries of hosiery manufacture and dyeing and cleaning, and the general indications of sound and well-planned local government. This is the 50th year of the local Council's history, and as Dr. E. W. Smith remarked at the luncheon, it was significant that on Empire Day in the month of victory and in Hinckley's Jubilee Year they should have a Britton in the Presidential chair.

The members assembled in the morning at the gas-works, where they were welcomed by the President and members of the Gas Committee, and went on to make an inspection of the works, a history and description of which was presented in a well-illustrated 28-page brochure, special attention being paid to those features to which Mr. Britton had referred in his Presidential Address on March 15 (see "JOURNAL," April 4, p. 436).

After the inspection the visitors proceeded by buses to the Grammar School, where they were the guests at luncheon of the Chairman and members of the Council. After the Loyal Toast, submitted by the Chairman, Mr. A. MOORE, J.P., Chairman of the Council, Mr. A. W. SMITH proposed the toast of "The Town and Industries of Hinckley," and congratulated the Council upon its Jubilee and its Engineer and Manager on a very clean and efficient gas-works. Mr. Britton, he said, was ably backed by an enterprising Gas Committee, and it must be gratifying to him to occupy the Presidential chair of the Association, prepared as he must be to face many difficulties in the new era on which we were entering. There were many problems before them, notably labour, coal supplies, housing, and the transition of industry from war to peacetime production, but he believed that with the vitality and ingenuity possessed by the Council and the manufacturers in the area Hinckley was destined to become an area of prosperity.

Colonel E. C. ATKINS, President of the Hinckley and District Hosiery Manufacturers' Association, in responding, spoke of the long history and development of the town's hosiery and footwear trade, and said they viewed the problems of housing and the distribution of industry with some trepidation. While they looked for progress and some prosperity, they hoped to preserve the amenities of the area and the charms of its own "green belt."

Dr. E. W. SMITH, President of the Institute of Fuel, proposed the toast of "The Association," which he described as one of the most alive associations in the Industry. It had been recognized that the Industry could not succeed unless a vital interest was taken in local associations, of a technical nature in particular, within the Industry. One of his first jobs as President of the Institute of Fuel had been to look into the matter of organization, and within a short time they had formed eight sections, each responsible in its area for the technical development of the fuel industries as a whole. The Midland Association had done good work, particularly during the war years, and it was due to members of the Association that the idea of the very valuable Regional Gas Engineering Advisory Boards was initiated. They were to be congratulated on the way those Boards had spread throughout the country. Another good thing was done last year, when Mr. Rhead showed that if they were going to be a first-class Industry, particularly, but not only, on the technical side, it was necessary that everyone who hoped to pull his weight should be thoroughly well trained. Consequently it was essential that not only should the technical schools be adequately staffed and attended, but that the Universities in the highest grade should be prepared to collaborate completely with the Industry in producing men who could make their best efforts in the future progress of the Industry. The future of the Industry, both for industrial and for domestic purposes, was almost infinitely great, and organization, administration, and freedom from parochialism was going to make it possible to make a big step forward. They did not know what was going to happen as a result of the Heyworth Committee and the like; but whatever happened in the end would depend on "us" and on no one else.

"If we are regionalized, if there is to be a Board, or Boards, whatever happens they cannot get on without us. They cannot succeed without us; they cannot do anything without us. Consequently we have got to be ready. We have got not only to be ready, but to function now as effectively as possible, and that is where the Midland Association can be of the maximum assistance."

Continuing, Dr. Smith said he was glad to know that Mr. A. W. Smith was to carry on some of his work for the Industry. He congratulated Mr. A. W. Lee on succeeding him at Birmingham, and the Birmingham Gas Committee on appointing as Assistant Manager and Secretary Mr. E. A. Goodland. He also congratulated Mr. Britton on being in charge of one of the first of the medium-sized undertakings prepared to put its works at the disposal of the research organization of the Industry for the development of processes for the good of the Industry.

There was a lot more that could be done by such an association than meeting together and exchanging experiences, reading papers, and attending each other's works. Education was of pressing importance. Education depended on knowledge, and knowledge depended on its availability, and he did not think any association should be satisfied unless it had demanded and ensured that every library of a public nature should be adequately stocked with all the text-books and books of reference required in the Industry. The Institute of Fuel was anxious to collaborate with them, and would be pleased to do anything it could to assist the Association.

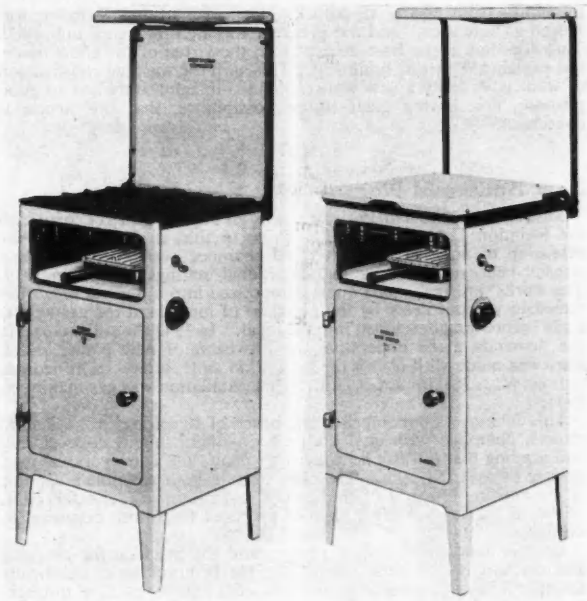
The PRESIDENT, in reply, briefly thanked the Chairman and members of the Hinckley Council for making the function possible, and he paid tribute to the work of his staff.

The toast of "Our Guests" was submitted by Mr. F. BURTON, Vice-Chairman of the Council, and responded to by Mr. G. C. PEARSON (Birmingham), in the absence of Mr. S. E. Whitehead, President of The Institution of Gas Engineers. "The Chairman" was proposed by Mr. A. W. SMITH and briefly responded to by Mr. MOORE.

In the afternoon the visitors were taken to the hosiery works of Messrs. Atkins Brothers and the Sketchley Dye Works.

"New World" Covertop

The fitting of a platerack is a most desirable feature of the domestic gas cooker. A later development is the folding wallplate which can be lowered on to the hotplate so as to cover it and at the same time provide a working table top. The use of such an arrangement has been limited because either it had no plate-shelf, or the shelf had to be cleared before the cover could be lowered.



The "New World" Covertop recently produced by Radiation Ltd. overcomes this problem in that the plate-shelf is supported independently of the covertop itself. This means that when the covertop is raised or lowered the plate-shelf remains stationary, and articles resting thereon are undisturbed.

Both the cover and the plate-shelf are designed with smooth, simple contours, and are fully enamelled so that cleaning is easy. The tubular steel support which carries the shelf also includes the fitments enabling the covertop to be released and lowered with one hand. The provision of buffers suitably placed ensures freedom from rattle.

The "New World" covertop will shortly be available for the following cookers: Nos. 345, 348, R.345 and R.348, and will also be available in due course for other Radiation cookers, including Nos. 202 and 302.

Associated Gas and Water Undertakings, Ltd.—The accounts presented at the 12th annual meeting on May 29 showed a total income for the year ended March 31 of £185,376, compared with £187,806 for the previous year. Profit, after providing for debenture interest, taxation, extinguishing discount on Debenture stock, and writing off £1,230 investments and properties, was £62,980, against £65,861. After payment of the usual dividends of 5% on the Ordinary and 6% on the Deferred capital, the sum carried forward, £32,500, remains the same as that brought in. The carry forward and reserve fund for equalization of dividends, totalling £57,500, is equal to approximately five years' net dividend on the Deferred stock. During the year a majority interest has been acquired in the Horley Gas Company.

Swindon's New Gas-Works

IN the "JOURNAL" of May 23 we gave an account of the opening by the President of The Institution of Gas Engineers, Mr. S. E. Whitehead, of new plant at the works of the Swindon United Gas Company, and in an editorial note in the same issue we also referred to the remarkable growth of the Company since 1932. Gas development in the Swindon area, under the direction and guidance of Mr. C. H. Chester, has been punctuated and commended from time to time in the "JOURNAL," so that there is no need to add much on the general aspect. In 12 years the Swindon Company's output has increased fivefold, the capital employed per unit of gas sold has been more than halved, consumption per consumer has steadily risen. The area of supply now covers 800 square miles. Substantial future progress, we think, is assured.

During 1937–38 the War Department established within the area a large permanent military camp. The question of fuel supply immediately arose, and the Company, guided by Mr. Chester, saw and grasped the opportunity. The camp became an all-gas establishment—the entire cooking, heating, and water-heating load being met by gas (accounting now for more than 875,000 therms per annum). This was no doubt an important factor in the Company's phenomenal progress, and though it was not the sole factor by any means, it must have influenced sanctions for new plant to cope with demand and helped to open the door to development. There is, of course, another factor of major importance: during the whole of the war in the European theatre, Swindon enjoyed what was tantamount to complete immunity from enemy air attack. The area around Swindon was indeed a "safe area," and the progress was in this regard unbroken. This does not in the least detract from the virtue of the effort made, but explains in part its fulfilment. It is with the wartime construction of what is virtually a new works, planned imaginatively and to good purpose, and having great future possibilities, that this article is concerned.

New Horizontal Plant

Throughout 1940 and 1941 there was an unprecedented demand on the Swindon Company for gas. Prior to this, a site allocated for extension of an intermittent vertical chamber oven installation had already been occupied by two additional settings erected in 1939. The works, in brief, was a quart compressed into a pint—a condition remedied without delay by the purchase of more land for gas-works, a site before long developed into the ideal. In 1942 the still increasing gas demands made imperative the provision of new plant, and a start was made with a unit of 2½ million cu.ft. a day—a horizontal unit by W. J. Jenkins & Co., Ltd. This installation was gas-making in 1943.

This Jenkins plant comprises one bench of 10 settings of horizontal retorts, complete with coal and coke handling plant, coke cutting and grading plant, waste heat recovery plant, and conveyors for yard storage of coal and coke. The plant on a 12-hour schedule is capable of carbonizing 170 tons of coal a day, and producing 2,500,000 cu.ft. of 480 B.Th.U. gas. This plant is prepared for future extension to double the capacity.

Coal is handled by wagon tippler, and the machine for charging and discharging the retorts is of the De Brouwer type, electrically driven. The retorts are 24 in. by 18 in. silica segmental, 22 ft. through. Each setting is complete with a 12 ft. tubular regenerative producer of curtain wall design. Each setting will carbonize 17 tons of coal a day, with an average combustion chamber temperature of 1,350°C. The producers are of a design to enable diluent producer gas to be withdrawn from the charging side of the bench, and are equipped with step grates. The grates are designed to provide the additional producer gas for dilution purposes, an additional 5 sq.ft. of grate area being allowed. The grate will gasify coke fuel at the rate of 9 to 10 lb. per sq.ft. per hour.

A feature of the installation, as already indicated, is the automatic producer gas dilution, effected by a Sigma calorimeter with relay control equipment. Producer gas is drawn off each producer through a 4 in. main fitted with a hot gas valve and led into a common 8 in. trunk main, at the end of which is a motorized modulating valve controlled by an electric relay mounted on top of a standard Sigma B.Th.U. recorder.

Any increase or decrease in the calorific value of the gas passing in the foul main changes the position of the pen on the recorder chart, thus, through the electric relay, opening or closing the motorized valve an amount governed by the extent to which the calorific value has increased or decreased. The calorific value of the gas leaving the house is controlled within fine limits.

An electrically propelled coke chute diverts the hot coke either into the producers or the Le Fleuve conveyor. This conveyor extends the full length of the bench, makes a semi-circle at the bench end and returns exterior to and parallel with the retort house. The skip hoist for handling coke is fully automatic, and elevates 30 tons per hour at a working speed of 90 ft. per minute. The coke is delivered to a dump hopper and thence by a feeder, 2-roll type cutter and chutes to twin screens. These are of the balanced reciprocating type, each having a capacity of 30 tons per hour. The coke is graded into four sizes.

Careful thought by the architect both for external appearance and the comfort of the operators was given to the design of the retort house. Ventilation and lighting are principal features of the design and provide ideal working conditions for the operators. A further feature is the ventilated stage floors. Air ducts are provided to remove the rising heat from furnaces and waste heat boiler. An extension to the westerly end of the retort house is subdivided into four parts to provide an instrument and control room, an electrical sub-station, an electricians' shop and a stokers' mess-room.

The existing Cochran-Kirke "Sinuflo" waste heat boiler in the intermittent vertical chamber oven house was dismantled and re-erected in the new horizontal retort house, a new boiler being supplied for the former.

There is a B.K. vacuum governor complete with "Western" double faced inlet and outlet and by-pass valves rated to pass 2½ million cu.ft. of gas per 24 hours.

The plant has been designed to give maximum ease of operation and economical working as regards labour and fuel and power. Ample working space is provided for the operators with adequate lighting for the night shifts. Spacious platforming is provided, giving easy access to all parts of the plant.

The provision of indicating and recording instruments was entrusted to Thermocontrol Installations, Ltd., who were also responsible for carrying out the main electrical switchgear and the connexions to the sub-distribution boards. The instrument room is included in the retort house extension. It houses the instrument panel only. One half of the panel is allocated to the various pressure, temperature, and draught instruments required for the accurate control of the retort house, while all main and sub-switches required for the electrical connexions, together with fuse boards, are arranged on the remaining half. The recordings on the panel include the circulating liquor pressure and temperature, foul main thermograph, works main and reduced steam pressure, vacuum and pressure recorder, and foul main vacuum indicator.

Efficient operation of the waste heat boiler is ensured by the provision of a complete set of combustion instruments which indicate locally inlet and outlet draught, temperature and percentage CO_2, and, in addition, by means of local transmitters, provide the remote recording of all these readings on the instrument panel.

The mercury vapour lighting system in the retort house, which has resulted in better lighting distribution and intensity than would be possible with normal gasfilled filament type lamps, was also carried out by Thermocontrol Installations, Ltd.

Intermittent Vertical Chamber Ovens

In 1934 the existing coal carbonizing plant being obsolete and inefficient it was decided to install new plant, and the order for two settings of intermittent vertical chamber ovens complete with coal and coke handling plant, coke grading and storage plant, and waste heat boiler was placed with W. J. Jenkins & Co., Ltd., of Retford, in June, 1934, and gas-making commenced in August, 1935. This initial carbonizing unit comprised two settings of six 3.75 ton chambers each and had a nominal daily output of 1,200,000 cu.ft. In 1936 the plant was extended by a further setting of six chambers, and this was gas-making in August of that year. Owing to a large increase in the sales of gas during the next two years it was decided to increase the plant further, and erection of two additional settings, each of six chambers, was begun in February, 1939, and gas-making started in September of the same year. Duplicate coal handling plant and waste heat recovery plant were also installed at the same time.

The completed installation consists of one bench of ovens in five entirely independent settings of six chambers each—*i.e.*, 30 chambers in all. Each setting is equipped with built-in producers and recuperators. The plant is capable of producing 3,000,000 cu.ft. of 450 B.Th.U. gas per diem.

The chambers are heated by producer gas generated in built-in step grate producers. The heating gas is admitted to the chamber heating flues at one point only. The air for combustion is also admitted at one control slide for each individual heating flue, and after being preheated in the recuperators by the outgoing waste gases is subdivided into three streams and passed into the heating flues at three points in the height of the chamber. This delayed combustion heating principle gives control of temperatures throughout the full height of the oven and ensures uniform carbonization of the charge of coal. Flexibility of the plant is such that (dependent on the gas production requirements) the charging period may be varied from 15 to 24 hours, alterations being effected at short notice.

Gas from the chambers is aspirated by offtakes fitted at both top and bottom of each chamber. From these offtakes the gas passes into cast iron hydraulic mains which are independent to each chamber. The bottom gas offtake is of a patented type, use being made of the bottom discharge door for this purpose. The offtake is actually formed in the dome of the chamber door, which is virtually a semi-circular pipe with a number of gas outlets throughout the full length

A GREAT DAY HAS DAWNED. With our hearts filled with thankfulness for victory, let us make this great resolve! Let us continue in our striving for a land free from anxiety and want—that the sacrifices of war may not have been in vain.

GIVE THANKS BY SAVING

SPACE GIVEN BY THE WOODALL-DUCKHAM CO., EPSOM ROAD GUILDFORD. (Tel.: GUILDFORD 3301)

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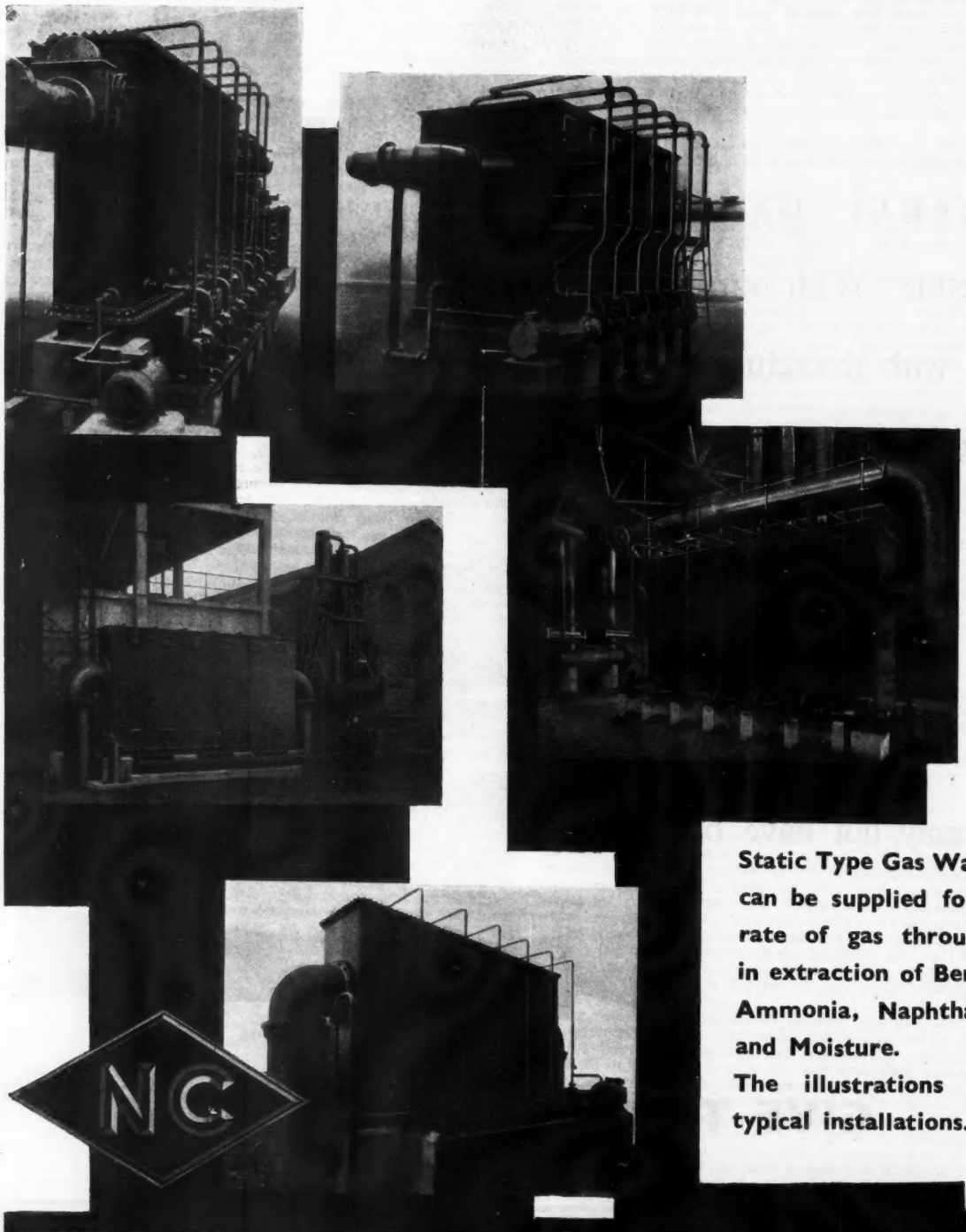
STATIC TYPE GAS WASHERS



Static Type Gas Washers can be supplied for any rate of gas throughput in extraction of Benzole, Ammonia, Naphthalene, and Moisture.
The illustrations show typical installations.

NEWTON CHAMBERS & CO LTD THORNCLIFFE IRONWORKS SHEFFIELD

of the dome, through which gas passes to the collecting mains. This offtake is a feature of the plant, and by its use pressure in the lower part of the oven is eliminated. This elimination of pressure allows the use of water-sealed discharge doors, which have the advantage of providing a positive seal at all times, preventing leakage of gas from and air into the chambers.

All coke is passed over a balanced reciprocating screen and graded into four sizes and stored in reinforced concrete bunkers for loading direct into motor vehicles, carts, or rail wagons and either in bulk or bags as required. For bagging purposes a "Belle Isle" weigher is provided with elevated platform for easy handling to trucks and wagons.

After leaving the chamber settings the waste heat is largely recovered by waste heat boilers. The original boiler installed in 1935 was a Cochran-Kirke "Sinuflo," sufficient to serve three settings or 18 chambers. In 1939 a Spencer-Bonecourt boiler was installed capable of taking the waste heat from the extended bench of 30 chambers. In 1943 the original boiler was transferred into the new horizontal retort house and a Cochran-Kirke horizontal "Sinuflo" boiler was erected on the site. This latter boiler is also capable of taking the waste gases from all 30 chambers. All boilers are fitted with steam superheaters.

The plant has been designed and arranged to ensure economical working in so far as labour, fuel, and power requirements are concerned, and control instruments have been provided throughout to give a ready indication and check on working conditions. Ample working space is provided for the stokers with adequate lighting for use during the night shifts. Spacious platforming is provided to give easy access to all essential points of the plant, and an existing lift was re-used for passenger work.

C.W.G. Plant

An automatically operated carburetted water gas plant having a capacity of 1½ million cu.ft. of 450/475 B.Th.U. gas per 24 hours was installed by R. & J. Dempster, Ltd., in 1941. This plant is of ample proportions to deal with lower quality coke.

Pitch Gas and Carbon Plant

The plant was designed and erected in 1942 by the late Leon B. Jones, of the Jones Gas Process Company, Ltd., for the gasification of tar and pitch. In the process as operated at Swindon pitch alone is used and is carbonized at high temperatures, the volatile matter being converted to gas. The greater part of the fixed carbon remains, but instead of having a coke-like form the residue from pitch carbonization is a flocculent form of carbon. The major portion of this carbon is carried out of the generator in the gas stream, and what remains is deposited on the chequerwork and in the following heating run is burned in an air blast, reheating the chequerwork. A large percentage of the carbon carried out of the generator is separated from the gas stream, in a dry form, by cyclonic action and electrical precipitation, the remainder being washed from the stream and recovered in paste-like form.

All valves are operated by hyraulic power. The various hydraulic supply lines radiate from a Lockheed-Jones selector valve unit, at present manually operated. The central control is in the form of a desk, and all pyrometers and steam, pitch, and hydraulic gauges are mounted on this desk.

Pitch carbonized is of the medium soft variety, with a softening point of 36°C. (K. & S.) and a calorific value of 16,000 B.Th.U. per lb. Pumps and circuit pipes are steam jacketted, and a metering system is provided. The pitch sprayer is of Peabody-Jones design. Gas produced is valuable as a regular diluent gas, the average yield being 105 therms of 330 B.Th.U. gas per ton of pitch carbonized. The rated capacity of the plant is 600,000 cu.ft. per day.

The carbon-black, in dry form, is recovered from the gas stream in primary and secondary cyclones and by an "Elex-Precipitator" designed by W. C. Holmes & Co., Ltd. The product is discharged to a water-jacketted spiral screw conveyor where it is cooled before passing to a storage hopper, from which it is weighed and filled into paper bags, the bags being closed on a stitching machine. The dry carbon black produced is of very fine particle size and is used chiefly as a filling agent by the rubber trades.

The carbon washed from the gas stream is reclaimed from the water by separation, and, though theoretically an excellent fuel, it has a low net value and is used as boiler fuel.

Condensers, Tar Precipitator, Exhausters

There are four "Super-Type" horizontal water tube condensers serving the foul gas streams from the I.V.C.O. House and the new horizontal retort house. All were installed by W. C. Holmes & Co.

An electrical precipitator was installed in 1942 by W. C. Holmes & Co. between the condensers and exhausters for the removal of tar fog from 5,000,000 cu.ft. of gas per day, with an efficiency as high as 99 ±1% against the low back pressure of ¼ in. W.G.

The exhausters are of the Holmes-Connersville type. Three exhausters are available of capacities of 125,000, 165,000, and 220,000 cu.ft. of gas per hour installed in 1938, 1939, and 1943 respectively. All three exhausters are steam-engine driven, the two smaller machines by vertical high speed engines of Sissons manufacture, and the latest machine by a 45 h.p. Ashworth & Parker engine. The machines operate under suction conditions of 6 in. vacuum and deliver against a maximum back pressure of 48 in. W.G. The engines are capable of exhausting under vacuum conditions of 25 in. of mercury to a steam condensing plant or alternatively into the main exhaust line to atmosphere. Each exhauster is fitted with a by-pass to facilitate starting up and changing over and the machines are individually governed to maintain the specified suction conditions, control being effected by a link motion to an equilibrium steam throttle valve on each engine.

Purifiers were installed in 1938 by W. J. Jenkins & Co., consisting of 5 boxes. A further box was added in 1940, and when the Cirencester Works discontinued gas-making in 1939 the existing purifiers were dismantled and re-erected at the parent works for use on a separate C.W.G. stream.

A small Holmes-Connersville air blower has been installed to supply oxygen to the purifiers for partial revivification of oxide *in situ*.

Benzole and Sulphur Extraction

In 1937–38 a plant for the extraction of benzole and sulphur compounds was installed by W. C. Holmes & Co., replacing a small benzole recovery plant originally put in for wash oil regeneration in 1932. The new plant was one of few of its type in so far as particular attention was paid to the removal of organic sulphur, and as then installed was capable of removing benzole and organic sulphur compounds from 2,000,000 cu.ft. of gas per day with efficiencies of a maximum of 85%–90% and 80%–85% respectively, the oil circulation being a maximum of 40 gallons per 1,000 cu.ft. of gas. With the installation of the new plant the organic sulphur in the gas was reduced to 7 grains per 100 cu.ft., and the benzole yield was increased from 2 gallons to 3 gallons per ton of coal carbonized, representing an increase of 50,000 gallons of crude benzole per annum over previous working years. With the advent of war the demand for gas increased rapidly, and by 1942 consideration had to be given to the question of dealing with a possible daily make of 4,500,000 cu.ft., and in view of the need for increased benzole and toluole recovery steps were taken to improve the performance of the plant generally. It was found that no major alterations to the plant would be necessary providing the same quantity of oil was kept in circulation. This meant that when washing 4,500,000 cu.ft. of gas at 70°F. the efficiency of organic sulphur removed would be reduced to approximately 46%, increasing to about 70% as gas throughput decreased from peak load. However, increased toluene recovery to 80% was considered of prime importance, and the necessary modifications to the plant were carried out in 1943. The washer was remodelled and the benzole condenser extended, and on its revised duty the plant functioned extremely satisfactorily.

Early in 1945 further additions to the distillation plant were made, consisting primarily of a small still and fractionating condenser to remove the CS_2 and sulphur compounds from the crude benzole, thereby upgrading the quality of the benzole produced while still maintaining maximum recovery.

The station meter is a Connersville machine installed in 1938 for 3,600,000 cu.ft. per day, but is capable of dealing with a 25% overload at peak periods with accuracy.

Booster, Exhauster, and Meter House

All the boosting, exhausting, and generating plant, &c., is housed in a building specially designed for the purpose and which occupies a commanding position near the main entrance to the works. The house was built in 1938. All gas, water, steam and exhaust mains are located in a basement, the floor of which is at ground level, the main engine room floor being elevated some 9 ft., giving ample head room clearance to the basement. A ventilating fan complete with filtering unit was installed to circulate clean air through the building.

With this pressure system dust is prevented from entering the building, all doors and windows being kept shut; at the same time the necessary air changes are ensured. Maintenance of machines has been greatly reduced.

In 1934 two Connersville boosters each capable of handling 10,000 cu.ft. per hour against a pressure of 10 lb. per sq.in. were installed. Four years later, when the policy of integration was being fully pursued and new areas were being added to the quickly growing district, the decision was taken to increase the maximum permissible pressure on the high pressure system to 25 lb. per sq.in. The then existing machines were replaced by two Bryan Donkin vertical type compressors, each capable of passing 50,000 cu.ft. per hour against a pressure of 25 lb. per sq.in. with provision for a third machine. The demand on the system, however, increased so rapidly that a larger machine was installed. This third compressor was rated at 100,000 cu.ft. per hour against a pressure of 25 lb. per sq.in.

Shortly after the war started a fourth machine exactly similar to the third was installed.

Gasholders

In 1938 the first of the holder renewals was carried out at Gorse Hill, when a holder of a capacity of 628,000 cu.ft. was replaced by a spirally guided holder of a capacity of 912,000 cu.ft. In the following year a holder of 157,000 cu.ft. capacity used for water gas was dismantled and a 2-lift spirally guided holder of 295,000 cu.ft. capacity erected. After the absorption of Cirencester in 1939, the works were

LARGE-SCALE APPARATUS FOR THE COOKING AND SERVING OF FOOD

General view in the Principal Kitchen of a large Canteen Installation by

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scheduled as a holder station, and rapidly increasing demands made it necessary to legislate for additional storage. In 1942 a holder of 50,000 cu.ft. was scrapped and substituted by a 3-lift spirally guided holder of 147,000 cu.ft., and a holder of 95,000 cu.ft. capacity at the same works replaced by a 4-lift spirally guided holder of 336,000 cu.ft. As additional storage becomes necessary it is the policy of the Company to install holders at out district stations rather than at the parent works.

The construction of the railway sidings and roadways, tar and water drains, &c., required for the new installation of horizontal retorts, and the preparation of new coal stacking ground, was entrusted to William Press & Son.

With the welfare of its employees in mind the Company constructed in 1941 a large canteen adjacent to the works. The building is on modern lines, and the preparation and cooking of food is carried out under the supervision of the Company's Home Service Demonstrator. The whole building is centrally heated. A dressing and washing room is provided. The room is equipped with four banks of clothes lockers, two of which are heated—each locker individually—by a hot air stream supplied from a gas-fired air heating plant.

Wales and Monmouthshire Association of Gas Engineers and Managers

Presidential Address*

by

W. T. KENSHOLE, Merthyr Tydfil

THE carbonization of coal in a modern well run gas-works has now reached a very high standard of thermal efficiency. While it is unthinkable that finality has been reached, it would appear from the technical information at present available that existing methods of gas manufacture are likely to remain for some time to come with improvements and refinements in plant design. It is my view, however, that in the course of time gas-works, as we know them to-day, will be superseded by coal-processing plants operated under full chemical control, and designed to produce the cheapest gas possible with the maximum amount of tar products and the minimum production of coke. The position to-day is that there are many comparatively small works equipped with modern carbonizing plants efficiently operated which can compare favourably with many of the larger works. These are often, however, not in a position to provide the amount of technical supervision which is available on the larger works. Furthermore, the load factor is not always a good one. In the meantime, much can be done by installing modern processes and the introduction of mechanical handling for materials.

In 1942 the Gas Engineering Advisory Boards were brought into being and these have proved an outstanding success, as in practically all cases efficiency figures show a marked improvement in spite of the progressive deterioration in the quality of the coals delivered, the arrears of maintenance of plant, and the shortage of skilled supervision. These improvements have only been made possible by the effective co-operation of all concerned, and in the aggregate have resulted in a substantial tonnage of coal being saved, together with, in many cases, an improvement in the quality of the gas produced. Constant vigilance of retorts, mouthpieces, vacuum control plant, and maintenance of these in the highest state of efficiency, have been the keynote of reducing wastage of gaseous therms. The success which the Boards have achieved justifies their being continued.

Coal Supplies

The question of coal supplies is a sorry tale as regards both price and quality. Much that is delivered to our works is far from suitable for processing, so it is to be hoped that the effort now being made to find a solution for the better working of this great Industry will prove beneficial to us in particular and the nation as a whole. In the present circumstances it is essential that the coke we produce should be as well prepared as possible in the matter of sizing and dryness, for we must never lose sight of the fact that in the process of high-temperature carbonization approximately two-thirds of the available therms are in the form of coke, the sale of which reflects so materially upon the price at which gas can be sold. There is, then, every reason why this product should receive greater attention, particularly in our area. Coke should be looked upon as a residual product but as on a par with gas, and every care should be devoted to its preparation. In the disposal of coke much depends upon local conditions, but I appeal to you to give this matter your urgent and careful attention, as only by so doing can we hope to give this remarkable fuel the place it deserves and has obtained in certain parts of the country.

Taking South Wales as a whole, the domestic lighting load is one of considerable magnitude, and while in certain parts of the country little effort has been made to retain it, I submit that it is a load well worth striving to hold. The local conditions and the importance undertakings attach to this load varies in different parts of the country, but in South Wales, due to climatic conditions, gas for lighting has a definite place in the home, where the extra warmth derived adds to the general comfort. My Company has always gone all out for the domestic lighting load, having all the burners specially made to suit the gas supplied; and in pre-war days it was estimated that 50% of the gas supplied was used for lighting.

* Delivered at the Annual Meeting, Pontypool, May 17.

Gas for Industry

The good groundwork of the application of gas for industrial processes which was pioneered before the war has paid a handsome dividend in its extension for many new classes of industrial work. The developments in furnaces and industrial gas-consuming appliances have been considerably stepped up, so that with suitably designed tariffs this load can be considerably extended and we can view the future with confidence. South Wales is classed as a development area, and every effort is being made to induce industrial concerns to establish factories in the area. In this connexion, failure to be in a position to assure prospective industrial concerns that adequate supplies of gas are available, at an economic figure, will cause irreparable harm to our Industry.

Wartime Sales

We shall soon be called upon to play our part in the vast rehousing programme which is necessary in connexion with schemes for the location of industry, slum clearance, &c. It is clear that substantial social changes and conditions of life call for amenities which were lacking in many pre-war homes; and it is here that good gas installation practice will be called for. There have been too many unsightly connexions which could have been avoided by collaboration with designers and architects; this difficulty can be overcome if we see that as far as possible the recommendations of the Gas Installations Committee are carried out. The appearance of all gas appliances has progressed very rapidly in recent years and has now reached a very high standard. In general, however, the same progress has not been made in gasfitting practice. In this regard it is unfortunate that for economic reasons the use of copper pipes for internal installations has not been generally possible, for its use tends to neater work.

The story of gas sales during the war has, in general, been one of continued increases, in spite of the blackout and other war measures, with the result that many undertakings have been hard pressed to meet the demands made upon them. In many instances gas loads have been forced upon undertakings part or all of which may be lost with the resumption of more normal conditions. These loads, if lost, will be difficult to replace.

It is essential, not only to individual undertakings, but to the Industry as a whole, that service to the consumer shall be above reproach. It should be our aim to give the best possible service while maintaining the price of gas as low as possible. It is a fact that few consumers use gas to the best advantage. To maintain modern gas apparatus in a really efficient condition requires some degree of skill, which many consumers do not possess. The ideal we should aim at is some form of service which will cover inspection and adjustment of all appliances, and which can be given at regular intervals with a view to maintaining constant efficiency. Much has been done by charged-for and free maintenance, but much remains to be done, and only by having a complete census can this work go forward. The best advertisement we can have is that of a satisfied consumer. However much attention is paid to advertising and pushing gas sales, the whole structure can only be maintained by good service. My Company had such a census which was built up by meter readers checking at regular intervals the appliances fixed in all premises. It is our intention to resume this method as soon as practicable with a view to starting a system of inspection and adjustment of appliances.

Not always is the importance of records and statistics of the activities of an undertaking fully appreciated. From a managerial point of view they are essential, and if properly used are the means of obtaining co-ordinated working of the departments.

The admirable Planning Report of the British Gas Federation establishes the fact that the Gas Industry is convinced that the future prosperity of our country lies in the most efficient utilization of our coal resources, while the by-products produced form an essential part of the rapidly growing chemical industry. The Government, too, through the Ministry of Fuel and Power, places the importance of fuel utilization high in the affairs of the country, and whatever form of control is finally decided for our Industry, it is clear that it must fit in with the national policy.

Rationalization as applied to industry has been concisely described as the reforming of an industry to the changed economics and scientific

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developments, to allow of the highest possible efficiency. I suggest it can best be applied to the Gas Industry by co-ordination and group working, which will inevitably lead to better manufacturing load factors for the plants installed, lower operating costs, and a means of providing that degree of technical supervision which is so necessary. Furthermore, it would be the means of standardizing charges and conditions over large areas.

The war has brought a large measure of prosperity to South Wales. If these conditions continue with the establishment of further factories, the necessity for the consolidation of our Industry by wise planning is urgent, otherwise haphazard extensions of plant cannot be avoided.

Disinfestation

One of the problems associated with the handling of large numbers of people under emergency conditions is the possibility of transmitting disease by lice. Lice can live only in contact with their human hosts, and breed in clothing, blankets, &c., used by human beings. Furthermore, other vermin, such as bugs and fleas, breed and spread rapidly in emergency conditions, and control of these vermin is very necessary. Ordinary washing does much to eliminate pests, but the eggs of lice can withstand such treatment, and, under emergency conditions, the use of large scale washing plant to deal with clothing and blankets would be difficult and cumbersome. The usual alternative is to bake the infested articles at a temperature of 212°F. for a period of 20 minutes, though this time factor may have to be amended according to circumstances. The difficulty in the process is in the fact that clothes and woollen articles, particularly blankets, are good insulators, and it is essential that the whole of the articles treated shall reach the required temperature.

The Industrial Gas Centres of the Gas Light and Coke Company and the South Metropolitan Gas Company, in collaboration, have, by request, provided a means of heating a disinfestation oven which consisted essentially of a brick built chamber 30 ft. long, 6 ft. wide and 8 ft. high open at each end, through which a conveyor carrying frames for the clothing and blankets passed.

Hot air is delivered by a gas-fired air heater to ducting in the bottom of the oven. It was considered advisable to insulate the inside of the brick chamber in order to minimize the high heat capacity effect of the stock bricks, and 2 in. of plastic asbestos was applied to the inside walls, floor, and roof. The chamber was fitted at each end with a pair of insulated side hung doors.

The direct fired air heater has a nominal gas rate of 500 cu.ft. (2.65 therms) per hour. Flow and return ductings were arranged, with recirculation from the oven chamber; as the oven was not sealed, no provision of fresh air inlet at the heater was necessary. A Keith Blackman 9 in. water-cooled fan was fitted, having a "V" rope drive from a ½ h.p. motor with a nominal delivery of 700 cu.ft. of air per minute, but it is now considered that a 12 in. fan with a nominal delivery of 1,050 cu.ft. of air per minute would have been an advantage. The safety devices consist of the following: Honeywell-Brown pilotstat, Cambridge gas regulator, an air vane valve in the air return duct operating on the gas supply from the Honeywell-Brown cut-off valve, and a temperature alarm bell operated by a thermo-indicator fitted in the oven.

The Ministry controlling the installation required the oven to maintain a steady temperature of 100°C. (212°F.) empty, and to be capable of disinfesting a continuous series of full loads of blankets, bedding and personal clothing without scorching.

Tests showed the following results:

Time to heat to 212°F.	95 min.
Time to recover to 212°F. after leaving the doors open for 10 mins. (the time of discharging and recharging the load)	15 min.
Maintenance rate at 212°F.—	
Duration of test	110 min.
Gas consumption	600 cu.ft. (3.18 therms).
Maintenance rate	328 cu.ft. (1.74 therms) per hr.

The temperature variation over the whole of the oven when uncharged was about ± 7°F., which was accepted as satisfactory by the Ministry, although it was realized that some adjustment to the dampers might be necessary when the oven was charged with clothing.

An essential factor was the temperature reached by the blankets and the air immediately in contact with the surface of the blankets, as this determined the time cycle for the destruction of vermin.

Two standards were laid down :

(1) Ten minutes' exposure at 60°C. (140°F.).

(2) Ten minutes' exposure at 70°C. (158°F.).

Condition (1) was more than adequate for killing the lice and their eggs, but there may be factors which make it wise to provide a greater margin as given in condition (2).

A number of copper-constantan thermo-couples was made, calibrated and attached to test blankets. Live lice and eggs (being more difficult to kill than fleas or bugs) were attached to the blankets (test load, 190 blankets) at the thermo-couple points and at various haphazard positions in the load. Blankets were weighed before and after treatment to estimate the amount of moisture removed from them, and the readings of the fixed temperature indicators taken at intervals corresponding to the thermo-couple readings.

The results of a series of tests showed that, starting with a minimum oven temperature of 200°F., condition (1) (ten minutes at 140° F.) was fulfilled in under 30 minutes and the lice and eggs were found to be 100% killed. Condition (2) (ten minutes at 158°F.) was, in other tests, fulfilled in 35 minutes, when again 100% of lice and eggs were killed.

Blankets of Government issue were used. Further tests with lice eggs placed on mattresses, in pillows (beneath pillow slip), personal clothing (beneath collar and in sleeves of ladies' outdoor coats), &c., have shown that the eggs have been 100% killed with a time cycle of 30 mins. The "time cycle" is the total time between changes of charge, the incoming charge following the outgoing without a break.

The installation was undertaken for the Ministry of Home Security under the direction of the Chief Engineer's Branch of that Ministry and the Consulting Engineers, Messrs. Mott, Hay, and Anderson. The entomological tests were carried out by Dr. Busvine, Entomologist, Ministry of Health, and details of the method are reported in the *Bulletin of Entomological Research*, Vol. 35, Part 2, July, 1944.

Automatic Control of C.V.

In our issue of March 28 we gave an abstract of a Paper on Automatic Control of C.V. by Mr. **F. J. Mills,** Works Superintendent to the Swindon United Gas Company, to the Western Junior Gas Association at a meeting held at Swindon when the members had the opportunity of inspecting the works. They were much impressed with the new horizontal retort house, which has been equipped with automatic calorific value control, and with the machinery house which accommodates Commersville exhausters, electric generators, and gas compressors. In informal discussion members commented freely on the excellent works layout.

Mr. **A. Tran** (Oxford) proposed a vote of thanks to Mr. Chester and his co-Directors, this being seconded by Mr. A. C. Rea (Bath).

Mr. **C. H. Chester,** O.B.E., Director and General Manager of the Undertaking, in his reply referred briefly to the history of the Undertaking since he had been associated with it.

There followed the Paper by Mr. Mills, and in the ensuing discussion Mr. **J. B. Rich** (Torquay) asked whether any arrangement had been made to ensure an equal offtake from each producer.

Mr. **Mills** replied that dilution with producer gas was not carried out when water gas was being admitted, and the proportion of producer gas from each producer was controlled by individual producer valves.

Mr. **F. A. Rhead** (Exeter) referred to work on the development of automatic calorific value control with which he was associated some years ago. He enquired how long the small purifiers supplying the calorimeter could be expected to work before becoming fouled.

Mr. **Mills** said it was their practice to change the filling of a purifier after one week of work.

Mr. **B. G. Hawkins** (Plymouth) asked if any warning device was fitted to indicate failure of electricity supply to the C.V. control.

Mr. **Mills** said that no warning device had been fitted. The control was run off the supply that fed the horizontal retort house, and any failure would at once become evident.

Mr. **F. H. Higton** (Taunton) referred to the deep producers and curtain walls as at Swindon, and asked whether the use of a separate producer to provide the diluent had been considered.

Mr. **T. W. Clapham** (Bristol) enquired what was the effect on the heats of the settings as the demand for producer gas fluctuated.

Mr. **Mills** replied that there was an excess of producer gas when the modulating valve was shut, but the effects of this were not serious. If dilution was stopped the producers were re-regulated.

Mr. **R. F. Robinson** (Ilfracombe) enquired about the capital cost or providing the calorific value control, and whether this cost had been justified by any savings. He also asked what change in C.V. of producer gas had been noticed at times of firing and clinkering.

Mr. **Chester** replied that the capital cost of the installation was £400–£500. He was satisfied that the method they had adopted was the cheapest way of obtaining automatic C.V. control.

Mr. **Mills** said that no data were at present available of changes in producer gas C.V.

Mr. **F. W. Sansom** (Exeter) asked whether intermittent dilution with producer gas gave a fluctuating A.T.B. number.

Mr. **Mills** replied that no tests had been made.

Mr. **F. A. Butt** (Cheltenham) said that, while accepting the present performance of the installation, did not Mr. Mills think that there was a strong argument in favour of a separate producer for the diluent?

Mr. **Mills** said this had not been justified by present experience, particularly as their producers were 5 sq. ft. larger than normal.

A vote of thanks to Mr. Mills for his Paper was proposed by Mr. **L. A. Ross** (Bristol) and seconded by Mr. **T. W. Clapham.**

The Women's Gas Council are offering the following lectures as part of their Education in Home Economics Programme: British Homes through the Ages, Modern Homes, Kitchen Planning, Cookery through the Ages, the Nation's Food, What's New in Nutrition? The Story of Modern Food Preservation, Gas and the Modern World, and Design for Living in America. Details may be obtained from the Organizing Secretary, Women's Gas Council, 1, Grosvenor Place, S.W. 1.

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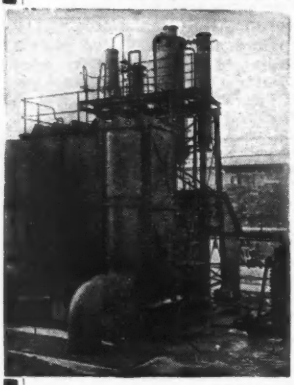

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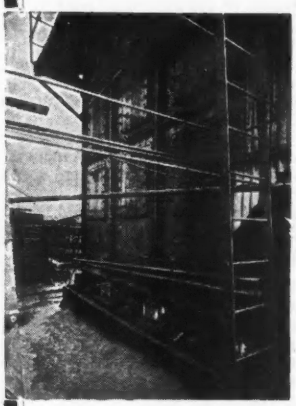

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Products Prices—Stocks and Shares

The London Market May 28.

As from March 5, by the Coal Tar Products Prices Order, 1945 (S. R. & O. 1945, No. 229), the maximum price of Pitch for briquetting has been increased to 60s. per ton f.o.r. supplying works, and the prices for Road Tar, as fixed by the Coal Tar Products Prices Order, 1943, S. R. & O. No. 1528, have been increased by one half-penny per gallon. There is also an increase of 5s. per ton in the price of standard Creosote/Pitch Mixture.

The prices of other products are unchanged.

Control of Benzole and Coal Spirit Order, 1944 (S.R. & O. 1944, No. 172), is in force.*

By this Order the price of Motor Benzole is fixed at 2s. per gallon. The Order also lays down the method of evaluating Crude Benzole, and calls for periodical returns to the Ministry of Fuel and Power from all producers of Crude and Refined Benzole.

Control of Toluene (No. 4) Order, 1944 (S. R. & O. 1944, No. 170), contains an amendment of the Control of Toluene (No. 3) Order, 1943.

There is also the Control of Benzole and Coal Spirit (No. 2) Order, 1944 (S. R. & O., No. 988).

Coal Tar Products Prices (No. 2) Order, 1944 (S. R. & O., 1944, No. 1051), allows increases in the maximum prices for all forms of Naphthalene.

* Slightly amended by Control of Benzole and Coal Spirit (No. 2) Order, 1944.

The Provinces May 28.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 90's. 2s. to 2s. 2¼d., pure, 2s. 9d. (now controlled by S. R. & O. 1944, No. 988, operative from Sept. 1, 1944. Benzole and Coal Spirit, also Coal Tar Naphtha and Xylole, are now controlled by the Control of Benzole and Coal Spirit Order, 1944, dated Feb. 18, 1944, S. R. & O. 1944, No. 172, operative from March 1, and S. R. & O. 1944, No. 988, part I, operative from Oct. 1, 1944, Carbolic acid, 60's, anthracene, creosote oil (hydrogenation), coal tar oils (timber preservation, &c.), and strained anthracene oil controlled by the Coal Tar Products Prices Order, 1943, dated Oct. 20, 1943 (S. R. & O. 1943, No. 1528), operative from Nov. 15, 1943. Naphthalene now controlled under S. R. & O. 1944, No. 1051, operative from Sept. 22, 1944.

Attention is called to Coal Tar Products Prices Order, 1945 (S. R. & O. 1945, No. 229), referred to on p. 305, "JOURNAL" of March 7.

* In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

Scotland May 26.

Spot business is limited but deliveries *ex* contract are proceeding rapidly. Refined tar*: Yield to Distillers is 5d. per gallon *ex* Works, naked. Creosote oil: Timber preserving quality,* 5½d. to 6½d.; hydrogenation oil,* 5⅞d.; low gravity or virgin oil,† 7½d. to 7¾d.; benzole absorbing oil,* 6½d. to 8d. per gallon. Refined cresylic acid* is 3s. 6d. to 4s. 6d. per gallon *ex* Works, naked, according to quality. Crude naphtha†: 6½d. to 7d. per gallon. Solvent naphtha*: Basic prices delivered in bulk, 90/160 grade, 2s. 8d., and 90/190 Heavy naphtha, Unrectified, 1s. 10½d.; Rectified, 2s. 2d. per gallon. Pyridine†: 90/160 grade, 13s., and 90/140 grade, 15s. per gallon.

* Price controlled. † Uncontrolled.

The prospect of an early General Election led to a heavy volume of selling at the opening last week and a weakening of prices. This continued until towards the close on Thursday, when a rally set in and by the end of the week buyers came in at the lower levels, chiefly in the home rail and industrial sections, with a consequent hardening of prices.

The Gas market was also busier towards the close, although there were a few price reactions. Gas Light units dropped 9d. and Imperial Continental failed to maintain the sharp rise of the previous week and closed 9 points lower. South Metropolitan ordinary also weakened. The feature of the week was the big increase in the two Malta and Mediterranean preference stocks, the price of both nearly doubling to 95 in the Supplementary List.

The following were the price changes on the week:

OFFICIAL LIST		
Gas Light Units	22/3—23/3	—-/9d.
Imperial Continental Ord.	123—128	—9
Primitiva Holdings Ord.	11/9—12/9	—-/6d.
Severn Valley Gas Corporation Ord.	23/6—24/6	+-/6d.
South Metropolitan Ord.	87—90	—6
United Kingdom Gas Corporation 4 p.c. 1st Red. Cum. Pref.	19/9—20/9	+-/6d.
SUPPLEMENTARY LIST		
Malta and Mediterranean 7 p.c. 1st Pref.	90—100	+45½
Ditto 7½ p.c. 2nd Pref.	90—100	+45½
PROVINCIAL EXCHANGES		
Sheffield Cons.	150—152	—1
Weston-super-Mare Ord.	113½—115½	+2½

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MANUFACTURERS of Gas-holders, Tanks, Condensers, Purifiers, Scrubbers, Washers, and every description of Gas Plant.
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ROBERT DEMPSTER & SONS, LTD., ELLAND, Builders of CARBONIZING PLANTS, both Horizontal and Vertical. Manufacturers of CONDENSERS, PURIFIERS, GAS-HOLDERS, &c., also every description of COAL and COKE HANDLING PLANT. *Telegrams:* "Dempster, Elland." *Telephone:* Elland 2241, 2242 and 2243.

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SULPHATE OF AMMONIA. Large agricultural suppliers developing export connexions have overseas contacts interested substantial quantities when conditions permit, particularly for irregular off-colour material. Write Box No. 504, Allardyce Palmer, Ltd., 109, Kingsway, W.C. 2.

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GEORGE COHEN, SONS & CO., LTD., Wood Lane, London, W. 12. Telephone: Shepherds Bush 2070.

THE AIR MINISTRY has available for disposal a number of PLANTS designed for the PRODUCTION OF HYDROGEN at various locations in England, Scotland, Northern Ireland, and South Wales.

The plants are of varying production capacities and comprise in the main hydrogen generators; blue water-gas plants with auxiliaries; pumps with varying forms of drive; purifiers; boilers; and in some cases water softeners.

Each site has one or more gasholders of capacities ranging from 2,000 to 100,000 cu.ft., either column or spiral-guided and of welded or riveted construction. In addition, with the exception of two plants, gas compressors either electric or gas-engine driven are installed.

Plants will be offered for sale as complete installations and standing erected, but without guarantee as to serviceability or condition, and purchasers would be required to arrange for dismantling, loading and removing.

Certain of the plants will be broken down into their component parts, and offers will be considered for gas holder, blue water-gas plants, purifiers and other components as separate units.

Interested parties should apply in writing in the first place, stating briefly their requirements to the Under-Secretary of State, Air Ministry (C.19(a)), Kingsway, London, W.C. 2.

APPOINTMENTS VACANT

SIX fully qualified experienced GASFITTERS and one METER REPAIRER are required by the Port Talbot Corporation Gas Department.

Wages : 95s. 3d. per week of 47 hours.

Apply, stating Age, Experience, and position in respect of National Service to the Engineer and Manager, Gas Offices, 18, Station Road, Port Talbot.

URBAN DISTRICT COUNCIL OF NEW HUNSTANTON

GAS AND WATER ENGINEER AND MANAGER

APPLICATIONS are invited for the appointment of GAS AND WATER ENGINEER AND MANAGER at a Salary in accordance with Grade "C" and the conditions of the Eastern District Provincial Council for Local Authorities' Administrative, Technical, Professional and Clerical Services, the salary fixed by Grade "C" being £365 per annum by £15 to £410 plus cost-of-living bonus, at present £59 16s. per annum.

The appointment, which will be determinable by three months' notice on either side, is subject to the provisions of the Local Government Superannuation Act, 1937, and the selected applicant will be required to pass a medical examination.

Applications, stating Age, Qualifications and Experience, accompanied by *copies* of not more than three recent Testimonials, must be delivered to the undersigned endorsed "Gas and Water Engineer" not later than noon on June 23, 1945.

Canvassing, directly or indirectly, will be disqualification.

Council Offices, Hunstanton, Norfolk. W. H. Behn, Clerk of the Council.

May 18, 1945.

WANTED.—Experienced GASFITTER. Present rate 1s. 10.78d. per hour, with overtime above 47 hours per week. Permanency for suitable man. House available.

Apply Gas-Works, Church, Lancs.

BOROUGH OF LEIGH

DEPUTY GAS AND WATER ENGINEER AND MANAGER

APPLICATIONS are invited for the appointment of DEPUTY ENGINEER AND MANAGER of the Gas and Water Departments of the Corporation, at a commencing Salary of not less than £460 nor more than £500 per annum, according to the qualifications and experience of the selected applicant, plus appropriate cost of living Bonus (at present 23s. per week).

Applicants must have had experience in the duties of a similar office and, in particular, of Continuous Vertical Retorts, Carburetted Water Gas Plant, Benzole Recovery and Concentrated Ammonia Plants, Works Reconstruction, Distribution of Gas and Water, and in the control of labour.

The appointment, which will be determinable by one month's notice on either side, will be subject to the provisions of the Local Government Superannuation Act, 1937, and to the successful applicant passing a medical examination to be conducted by the Medical Officer of Health.

The person appointed will be required to devote the whole of his time to the duties of the office and to reside within the Borough.

Applications, stating Age, Experience and Qualifications, together with *copies* of three recent Testimonials, endorsed "Deputy Gas and Water Engineer and Manager," must reach the undersigned not later than June 18, 1945.

Canvassing directly or indirectly will be a disqualification.

Town Hall, Leigh, Lancs. Albert Jones, Town Clerk.

May 25, 1945.

WANTED.—Experienced GASFITTER. Must have knowledge of Water Heating Apparatus, and a knowledge of Gas-fired Central Heating Installation desirable. Standard rate of wages 1s. 9½d. per hour for 47 hours per week. The position is permanent for suitable man.

Apply in writing to The Engineer and Manager, Conway Gas Company, Ltd., Castle Street, Conway.

URBAN DISTRICT COUNCIL OF TYLDESLEY

(Gas Department)

APPLICATIONS are invited for the position of WORKING FOREMAN at the Council's Gas-Works.

Applicants should be well experienced in the working of horizontal retorts, and have a good general knowledge of gas-works practice.

Wages £5 19s. per week, including War Bonus, with free house, coal and gas. House immediately available.

The position is designated under the Superannuation Scheme, and the successful applicant will be required to pass a medical examination.

Applications, with *copies* of not more than three recent Testimonials, to be forwarded to the undersigned not later than June 13, 1945.

Town Hall, Tyldesley, Lancashire. Richard F. Wilson, Clerk of the Council.

SKEGNESS URBAN DISTRICT COUNCIL

GAS ENGINEER AND MANAGER

THE Council invite applications for the above Appointment, at a commencing Salary of £550 per annum, rising by annual increments of £25 to a maximum of £750 per annum (plus temporary cost of living bonus £59 16s. per annum).

Applicants must be duly qualified Engineers with a thorough knowledge and experience of the control and maintenance of Gas-Works plant, including Woodall-Duckham vertical retorts, benzole plant, and the usual purifying plant. Previous experience in the general administration of a gas undertaking is essential, and applicants should also be capable of drawing up specifications and preparing plans for extensions or alterations, and of supervising such work.

The person appointed will be required to devote the whole of his time to the duties of the office.

The appointment will be determinable by three months' notice on either side and is subject to the provisions of the Local Government Superannuation Act, 1937. The selected candidate will be required to pass a medical examination.

Applications, stating Age (which should not be over 50), Qualifications, present appointment and duties, and full details of Experience, together with information as to position in relation to National Service Acts and Essential Work Orders, must be delivered to the undersigned, accompanied by *copies* of not more than three recent Testimonials, not later than Monday, June 18, 1945.

Canvassing will disqualify.

Town Hall, Skegness. Ivor M. Cule, Clerk to the Council.

May 26, 1945.

CITY OF NOTTINGHAM

(Gas Department)

ASSISTANT MAINS SUPERINTENDENT

APPLICATIONS are invited for the above Position at a commencing Salary of £400 per annum, plus war bonus (at present £59 16s.).

Applicants must have experience in Main and Service work of all types, including High and Low Pressure Distribution, with District and Service Governors.

Experience in Drawing Office practice, preparation of Estimates and control of men is essential.

The appointment is subject to the provisions of the Local Government Superannuation Act, and the successful applicant will be required to pass a medical examination and to reside within the City.

Applications, stating Age, full particulars of Training, Experience and Qualifications, together with the applicant's position in relation to the Essential Work Orders and National Service Acts, and accompanied by *copies* of two recent Testimonials, should be addressed to the undersigned not later than Wednesday, June 20, 1945.

Guildhall, Nottingham. J. E. Richards, Town Clerk.

May, 1945.

WANTED.—Experienced MAIN LAYER, perma-nent post. Rate of pay, including war bonus, £4 7s. per week of 47 hours, plus participation in Co-partnership and Pension Fund.

Apply to the General Manager, Weston-super-Mare & District Gas Company, 32, The Boulevard, Weston-super-Mare.

SALES MANAGER required by Gas Appliance Manufacturers. Must be experienced in Sales Organization and Control of District Representatives.

Applications, stating Qualifications, Experience, and Age, should be addressed to No. 9435, "Gas Journal," 51, High Street, Esher, Surrey.

CUPAR GAS COMPANY, LIMITED

WORKING FOREMAN required. Following qualifications essential : Engineer trained, knowledge of Vertical Retorts (W.D.), capable of all running repairs and maintenance of Gas-Works plant and usual works tests. Must be strict disciplinarian. Wages £5 10s. per week plus free house, coal and gas.

Applications, stating Age, Experience, and any other pertinent details, along with a *copy* of three recent Testimonials, and position with regard to Essential Works Order and National Service, to the undersigned on or before June 16, 1945.

A. M. MacPherson, Manager.

WANTED.—OPERATOR for Vertical Chamber Ovens, 8 hour shifts, 15s. 2d. per shift.

Apply Manager, Bridlington Gas Company, Bridlington, E. Yorks.

APPOINTMENTS WANTED

POSITION as CONSUMERS' ENGINEER required. Lifetime experience in district work, Estimating, Advising, Showroom Salesman. Age 49 years. Free now.

Apply No. 9437, "Gas Journal," 51, High Street, Esher, Surrey.

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PORT TALBOT CORPORATION

TENDERS are invited for the PAINTING of Gas-holders and other plant at the Aberavon, Margam and Cwmavon Gas-Works.

Further particulars and specification may be obtained from the Engineer and Manager, Gas Offices, 18, Station Road, Port Talbot.

Tenders, enclosed in a plain sealed envelope not bearing any name or mark to indicate the sender, and endorsed "Painting of Gas-Works Plant," to be received by the undersigned not later than 9 a.m., Saturday, June 16, 1945.

Municipal Buildings, Port Talbot, Glam. W. King Davies, Town Clerk.

COUNTY BOROUGH OF BLACKPOOL

(Gas Department)

TENDERS are invited for the Supply, Delivery and Erection of an INDUSTRIAL VACUUM CLEANING PLANT at the Marton Gas-Works of the Blackpool Corporation.

General conditions and particulars may be had on application to the Gas Engineer and General Manager, Gas-Works, Princess Street, Blackpool.

Tenders to be enclosed in an envelope and endorsed "Industrial Vacuum Cleaning Plant," and not bearing any name or mark indicating the sender, must be delivered to me at the Town Hall, Blackpool, not later than 10 a.m. on Wednesday, June 20, 1945.

Town Hall, Blackpool. Trevor T. Jones, Town Clerk.

May 23, 1945.

TENDERS are invited for PAINTING three Gas-holders and one Steel Chimney. Particulars and Specification may be obtained on application from the Gas Engineer, Gas-Works, Stourbridge. Sealed Tenders endorsed "Gasholder Painting" must be received not later than first post Friday, June 22, 1945.

The Council does not bind itself to accept the lowest or any Tender.

Stourbridge. A. P. Drury, Town Clerk.

May 26, 1945.

MAINLAYING

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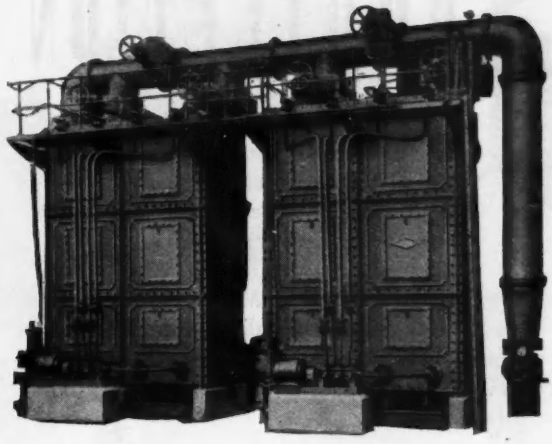

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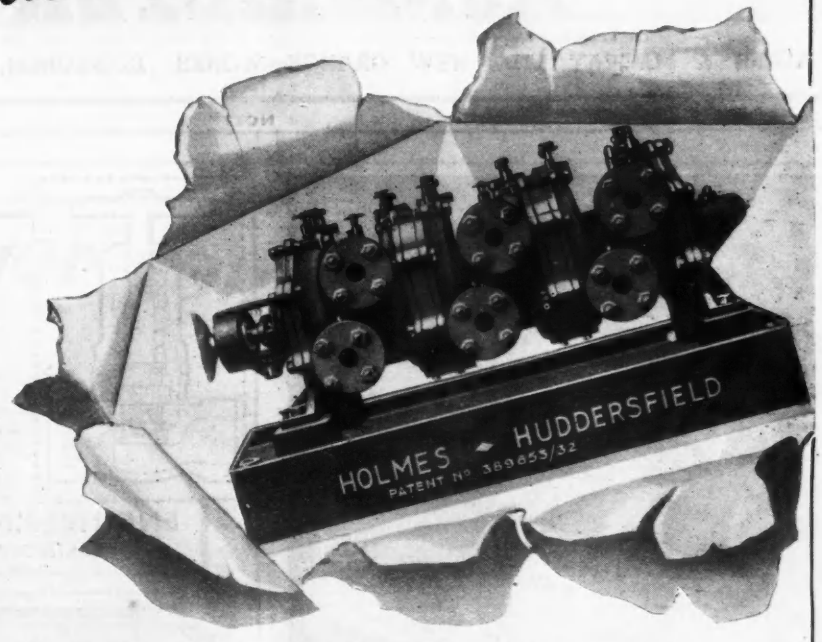

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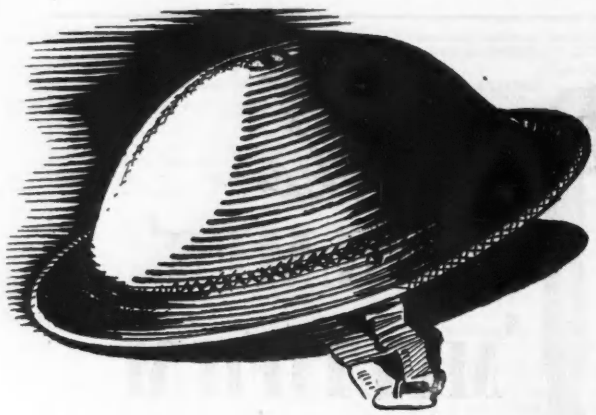

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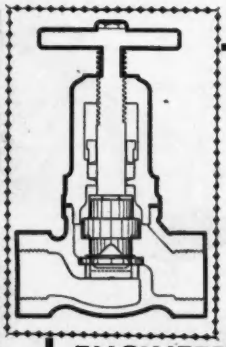

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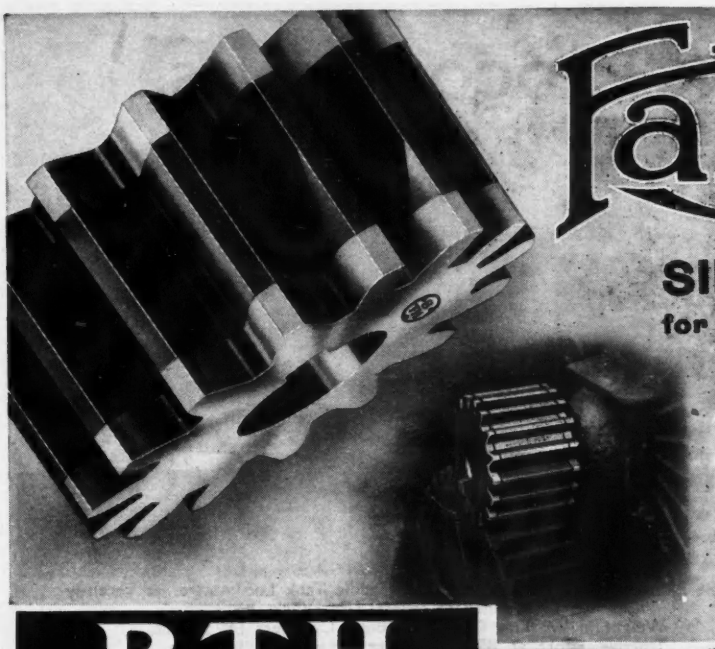

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Strong, silent, shock-absorbing; weather-resisting; unaffected by oil, water, steam, acid fumes, heat or cold; absolutely vermin proof; prolong indefinitely the life of the metal gears with which they mesh.

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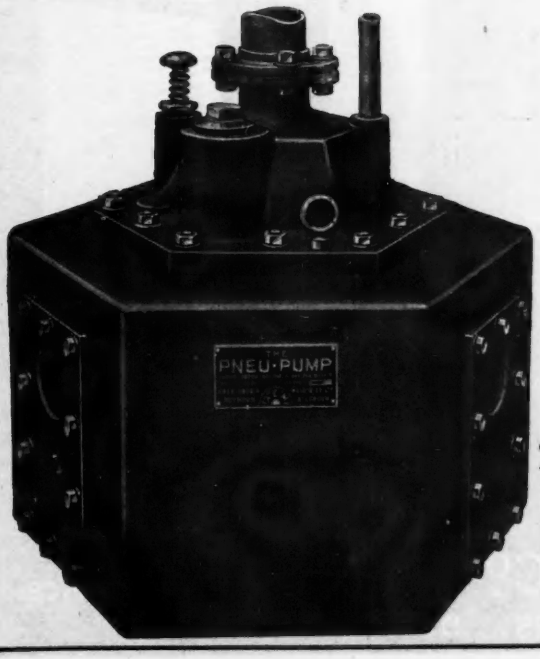

Here is a pump which can be operated either by steam or compressed air. It has no moving mechanism and is specially designed for the pumping of liquids containing grit or other solid matter.

Write for particulars to the makers
AMES CROSTA MILLS & CO. LTD.
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PNEU PUMP

GAS WORKS SHUNTING LOCOMOTIVES

BUILDERS OF ALL TYPES OF STEAM LOCOMOTIVES, ALSO WAGONS, TURN-TABLES AND OTHER RAILWAY EQUIPMENT.

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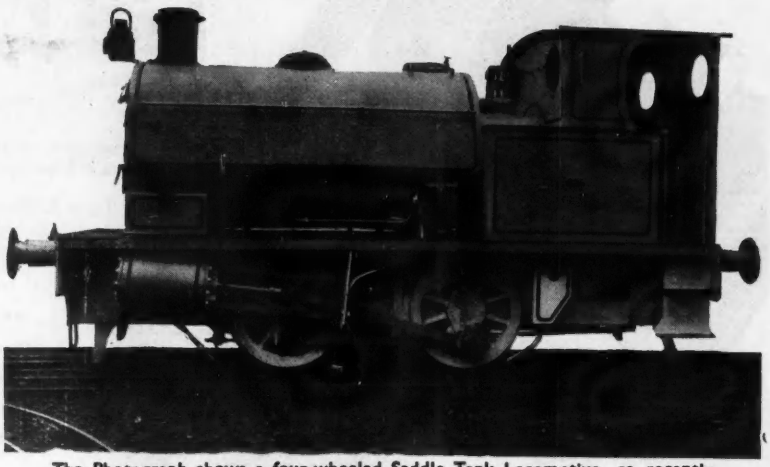

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Weight in Working Order 27 Tons. Cylinders 14" × 22"
Tractive Effort at 85% of Boiler Pressure — 13,800 lb.

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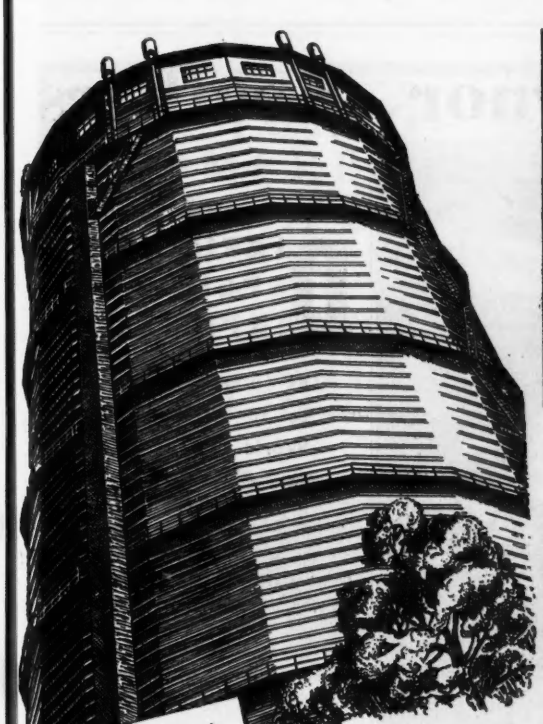

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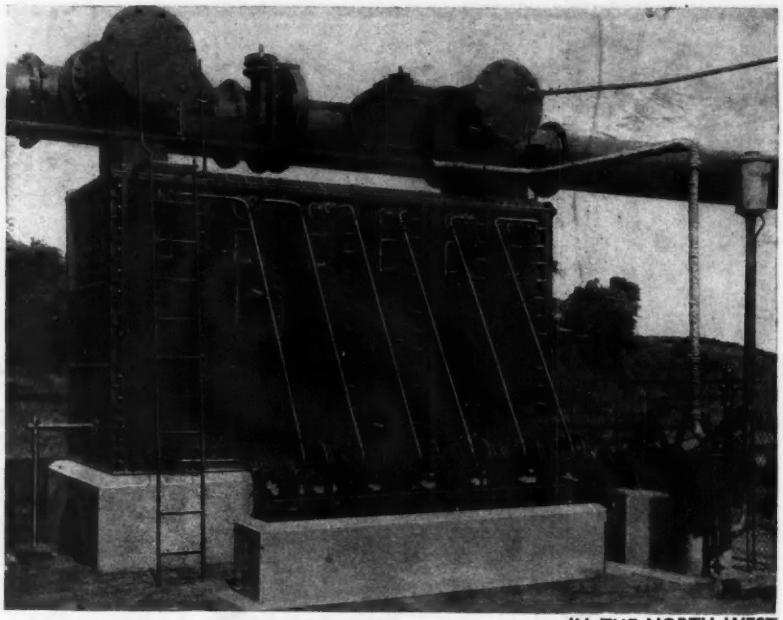

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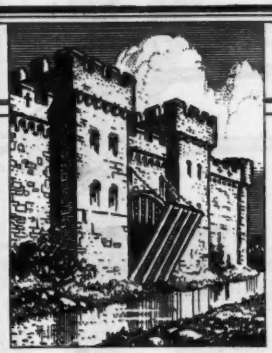

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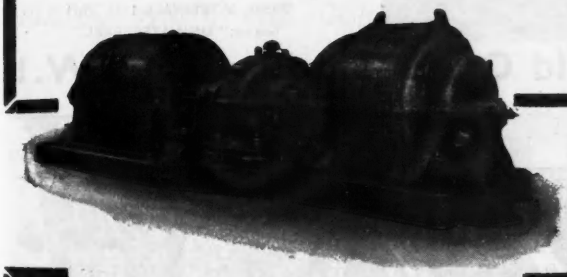

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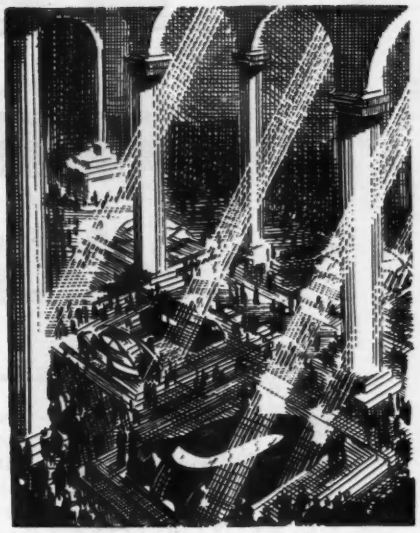

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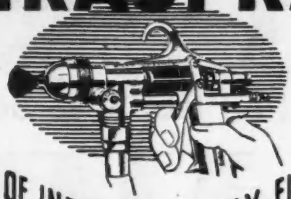

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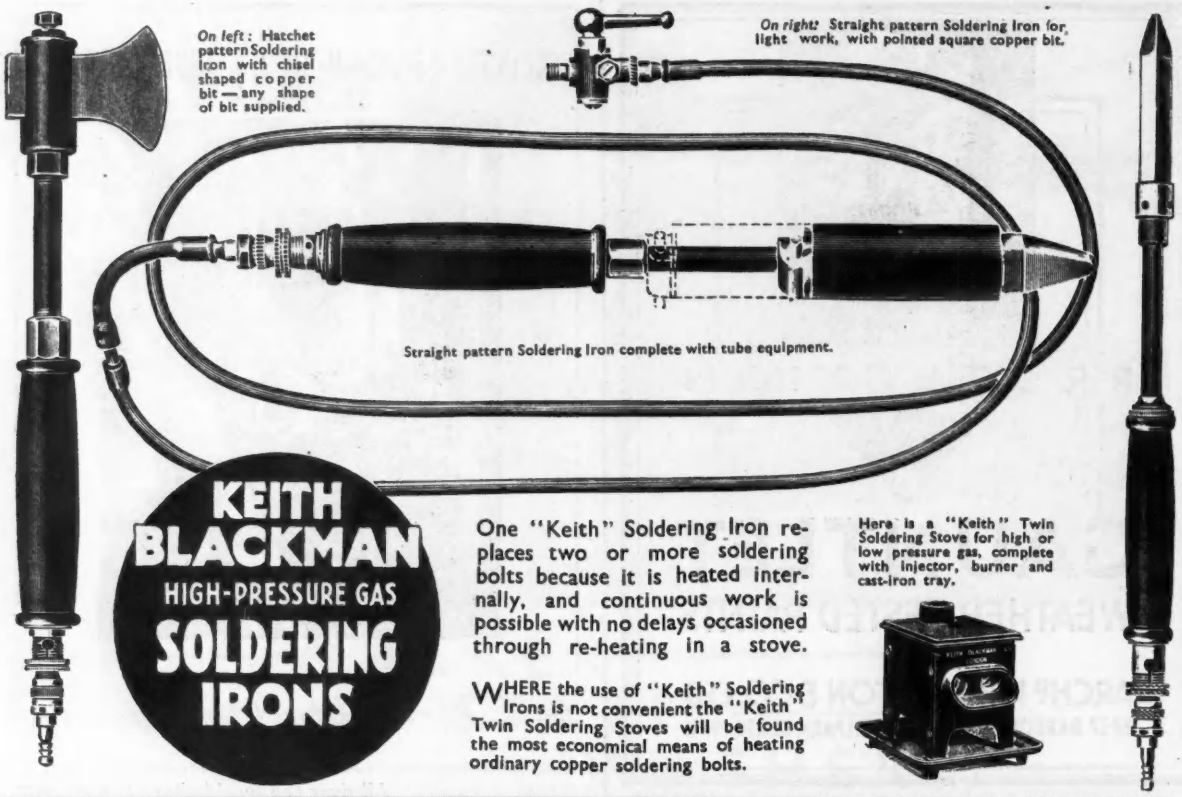
On left: Hatchet pattern Soldering Iron with chisel shaped copper bit — any shape of bit supplied.

On right: Straight pattern Soldering Iron for light work, with pointed square copper bit.



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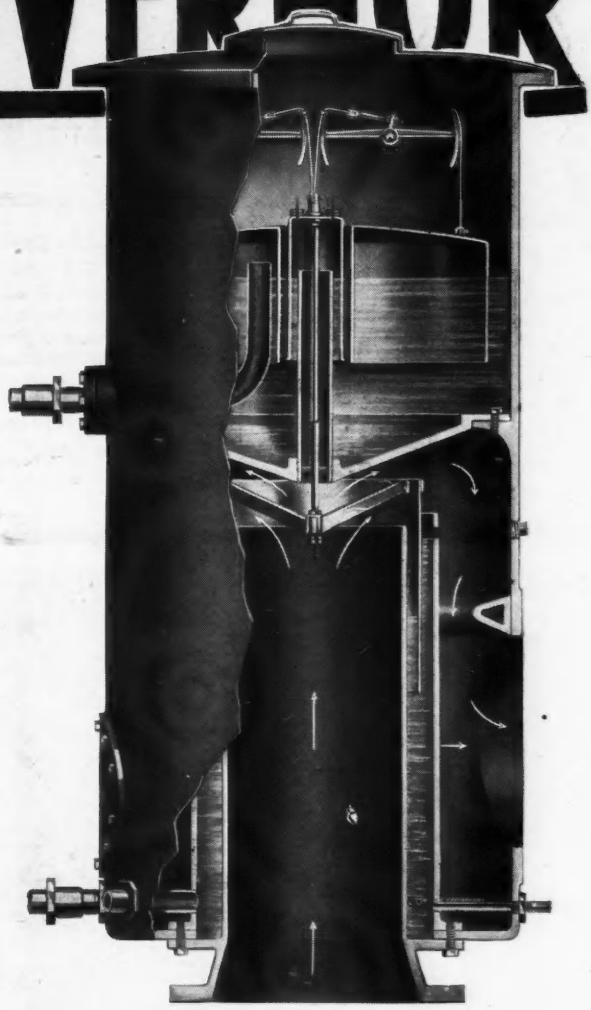

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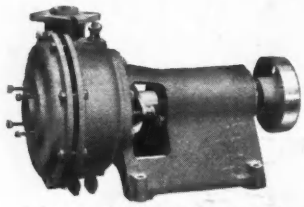

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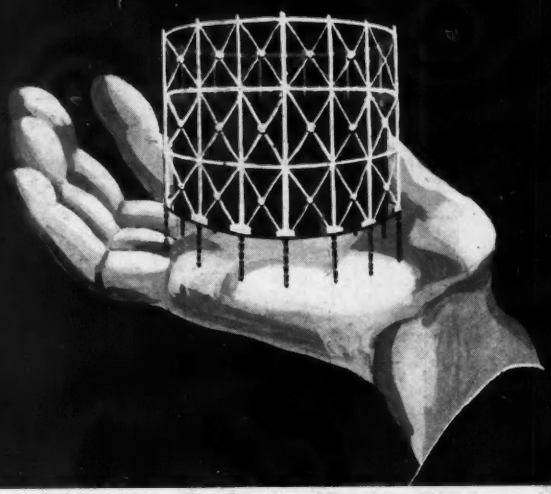

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